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## EXPLANATORY NOTES

for

FOREST SERVICE

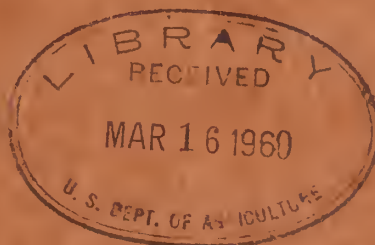
DEPARTMENT OF AGRICULTURE

Fiscal Year

1958

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The obligations shown in the Project Statements are on the basis of the appropriations and activities proposed in the 1958 Budget Estimates, and in some instances the activities reflected in the Project Statement are further divided into subcategories, reflecting a more detailed description of the work conducted under the appropriation items.

It should be noted that the obligations reflected as subcategories in the Project Statements, while generally obtained from accounting records, in some instances represent the best approximation of the amounts indicated. Wherever it has been necessary, because of the nature of the activity, to distribute certain costs which are not taken directly from the accounts, every effort has been made to allocate such charges as accurately as possible based on past experience, special studies, cost analyses, or other factors.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud.

2. The second part of the document outlines the specific procedures for recording transactions. It details the steps involved in the accounting cycle, from identifying the transaction to posting it to the appropriate ledger account.

3. The third part of the document discusses the role of the auditor in verifying the accuracy of the records. It describes the various audit procedures used to test the reliability of the accounting system and to ensure that the financial statements are true and fair.

4. The fourth part of the document discusses the importance of internal controls in preventing errors and fraud. It describes the various types of internal controls, such as segregation of duties and authorization requirements, and explains how they are implemented in the accounting system.

5. The fifth part of the document discusses the role of the accounting system in providing information to management. It describes the various types of financial statements and other reports that are generated by the accounting system, and explains how they are used by management to make decisions about the company's operations.



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## FOREST SERVICE

### Purpose Statement

The Forest Service is charged with responsibility for promoting the conservation and wise use of the country's forest and related watershed lands, which comprises one-third of the total land area of the United States. Authority for the work of the Service stems from numerous acts, the more important ones being the Timber Culture Repeal Act of March 3, 1891; Sundry Civil Appropriation Act of June 4, 1897; "Transfer" Act of February 1, 1905; "Weeks" Act of March 1, 1911; Act of June 7, 1924; Forest Research Act of May 22, 1928; and Cooperative Forest Management Act of August 25, 1950.

To meet its responsibility the Forest Service engages in three main lines of work, as follows:

(1) Management, protection, and development of the National Forests. The guiding principle is "the greatest good of the greatest number in the long run". This requires obtaining the maximum practicable yield and use of the many resources of the National Forests on a continuing basis, to meet both local and national needs--under normal conditions and during times of stress. The 181,000,000 acres of National Forests are located in 40 States, Alaska, and Puerto Rico. About one-third of the remaining saw timber in the country is in the National Forests.

In managing the National Forests, technical forestry is applied to the growing and harvesting of timber crops. Estimated harvest through timber sales in 1957 is 7.75 billion board feet. Grazing of approximately eight million head of livestock is scientifically managed to obtain range conservation along with the use of the annual growth of forage. Watersheds are managed for regulation of stream flow, flood prevention, sources of water for power, irrigation, navigation and municipal supply. Management includes the handling of over 45,000,000 visits of people to the National Forests for recreation purposes. Scientific management is applied to the extensive wildlife resources. Receipts from timber sales, grazing permits, land rentals, and water power permits exceeded \$114,000,000 in 1956. Estimated receipts for 1957 are about \$121,600,000.

The protection of the National Forests includes the control of forest fires, which numbered 12,156 in the first eleven months of the calendar year 1956; the control of tree diseases and insect epidemics; and the prevention of trespass.

The major development activities of the National Forests consist of reforestation, revegetation, construction of roads, recreational facilities, housing, and other necessary improvements and land acquisition and exchanges.

(2) Cooperation with State and private forest landowners is provided by the Forest Service to obtain better fire protection on the 431,000,000 acres of State and privately-owned forest lands and to stimulate development and proper management of forest lands.

Under the Soil Bank Conservation Reserve Program the Forest Service is responsible for the technical phases of planting trees on land regularly used for crop production, and for expansion of tree seedling production, primarily through the facilities of State forestry departments.

Also to carry out Section 401 of the Agricultural Act of 1956, assistance will be given the State Forester or equivalent State official, through advice, technical assistance and financial contributions to carry out increased tree planting, and reforestation work in accordance with plans submitted by the State and approved by the Secretary of Agriculture.

(3) Forest Research. The Forest Service conducts research in the entire field of forestry and the management of forest and related ranges. This includes the growth and harvesting of timber, its protection from fire, insects, and diseases, and the protection and management of watersheds. It conducts studies in forest economics, marketing of forest products, and a survey of the present extent and potential growth and use of the Nation's forest resources. It also conducts research to develop new and improved products from wood and to increase efficiency of utilizing forest products. Results of research are made available to owners of private forest and range lands, to public agencies which administer such lands, to forest products industries, and to consumers.

(4) Insect and disease control. Under the Forest Pest Control Act (16 U.S.C. 594-1-594-5) and the Lea Act (16 U.S.C. 594a), destructive insect pests and diseases that threaten timber areas are suppressed. Activities include two types of work carried on jointly by Federal, State, and private agencies:

(a) Surveys on forest lands to detect and appraise infestations of forest insects and infections of tree diseases and determine protective measures to be taken.

(b) Control operations to suppress or eradicate forest insect pests and diseases, including the white pine blister rust.

(5) Flood Prevention and Watershed Protection. On National Forest lands and on other forest lands within the watersheds authorized for treatment by the Department of Agriculture under the Flood Control Act of December 22, 1944, the Forest Service plans and installs watershed improvement measures, in the form of minor physical structures, cultural measures, and intensified fire control, to retard runoff and reduce flood water and sediment damage. Work on non-Federal land is carried on in cooperation with the Soil Conservation Service and the appropriate State and local agencies.

The Forest Service also cooperates with the Soil Conservation Service, appropriate State agencies and the local organizations sponsoring small watershed protection and flood prevention projects initiated under the Watershed Protection and Flood Prevention Act, as amended, in planning and installing forestry and related measures on the watersheds and in inter-agency studies of proposed water and land resource developments on river basins for the purpose of obtaining integrated resource development programs.



(6) Land Utilization Projects. Under the authority of Title III of the Bankhead-Jones Farm Tenant Act (7 U.S.C. 1011-1012), the Forest Service manages 78 land utilization projects covering areas of submarginal land acquired by the Department. The project lands and facilities are made available to States, local organizations, and farmers and ranchers at equitable rates under specific use conditions. Of the revenue received from use of the land 25 percent is paid to the counties in which the lands are located.

(7) Work performed for others. The Forest Service is frequently called upon to perform services for other Federal, State, and private agencies on a reimbursable or advance payment basis. Examples of these activities are:

- (a) Protection of other Federal and non-Federal forest lands intermingled with the National Forests.
- (b) Disposal of slash resulting from sales of timber and the rehabilitation of such areas.
- (c) Construction and maintenance of roads, and other improvements.
- (d) Investigations in forest, range, and water management and utilization problems.
- (e) Cooperative survey, mapping, administrative, and reforestation projects, etc.
- (f) Cooperation with defense and mobilization agencies on forest production and utilization projects, and related work.

The Forest Service maintains its central office in Washington with program activities decentralized to 10 Regional offices, 128 Forest Supervisors' offices, 764 District Rangers' offices, 9 Forest and Range Experiment Stations, and the Forest Products Laboratory. On November 30, 1956, the Forest Service had a total of 15,899 employees including 357 full-time employees in the central office and 12,683 full-time and 2,859 part-time employees in the field. The November 30 employment figures for the field are lower than average for the year because of seasonal factors. At the peak of the field season, the number of full-time employees is over 21,000 plus about 10,000 part-time and casual employees.

	Appropriated, <u>1957</u>	Budget Estimates, <u>1958</u>
Appropriated funds:		
National forest and other land management appropriations	a/ \$79,875,750	\$98,326,000
Cooperation with States	12,190,000	17,245,000
Research	<u>10,155,000</u>	<u>11,325,000</u>
Total appropriated funds (excluding permanent appropriations)	<u>102,220,750</u>	<u>126,896,000</u>

a/ Excludes \$684,361 available from prior year balances.





Summary of Appropriations, 1957, and Estimates, 1958

Appropriation Item	: :Appropriated, : 1957	: : Budget : Estimates, : 1958	: : Increase (+) : or : Decrease (-)
Forest protection and utilization:	:	:	:
Forest land management .....	\$54,615,750:	\$72,730,000:	+\$18,114,250
Forest research .....	10,155,000:	11,325,000:	+ 1,170,000
State and private forestry cooperation .....	: 12,190,000:	: 13,245,000:	: + 1,055,000
Total, Forest protection and utilization .....	: 76,960,750:	: 97,300,000:	: + 20,339,250
Forest Roads and Trails .....	a/ 24,000,000:	24,336,000:	+ 336,000
Acquisition of Lands for Superior National Forest .....	: b/ 500,000:	: 500,000:	: - -
Acquisition of Lands for Cache National Forest .....	: 50,000:	: 50,000:	: - -
Acquisition of Lands for National Forests, Special Acts .....	: 10,000:	: 10,000:	: - -
Cooperative Range Improvements .....	c/ 700,000:	700,000:	- -
Assistance to States for Tree Planting .....	: - -	: 4,000,000:	: + 4,000,000
Expenses, Brush Disposal (permanent)	: 4,500,600:	5,000,000:	+ 500,000
Roads and Trails for States (permanent) .....	: d/ 11,397,600:	: 11,848,000:	: + 450,400
Forest Fire Prevention (Smokey Bear) (permanent) .....	: e/ 15,000:	: 15,000:	: - -
Payment to Minnesota from the national forests fund (permanent)	: 46,500:	: 50,000:	: + 3,500
Payments Due Counties, Submarginal land (permanent) .....	: 575,000:	: 625,000:	: + 50,000
Payments to School Funds, Arizona and New Mexico (permanent) .....	: 129,400:	: 129,400:	: - -
Payments to States and Territories from the National Forests Fund (permanent) .....	: 28,487,700:	: 29,620,000:	: + 1,132,300
Total .....	147,371,950:	174,183,400:	+26,811,450
Deduct permanent appropriations (shown in detail above) .....	: f/ 45,151,200:	: -47,287,400:	: + 2,136,200
Total (excluding permanent appropriations) .....	102,220,750:	126,896,000:	+24,675,250

a/ In addition, \$599,782 available from prior year balances.

b/ In addition, \$41,680 available from prior year balances.

c/ In addition, \$42,899 available from prior year balances.

d/ In addition, \$393,935 available from prior year balances.

e/ In addition, \$8,712 available from prior year balances.

f/ In addition, \$645 available from prior year balances of "Development and improvement of a ranger dwelling, Tonto National Forest."

THE HISTORY OF THE

The history of the world is a vast and complex subject, encompassing the lives of countless individuals and the events that have shaped our planet. From the dawn of civilization to the present day, the human story is one of constant change and evolution. The study of history allows us to understand the patterns of human behavior, the forces that drive societal change, and the lessons that can be learned from the past. It is a discipline that seeks to uncover the truth about our world and our place within it. The history of the world is not just a collection of facts and dates, but a narrative that connects the lives of people across time and space. It is a story that is constantly being rewritten as new discoveries are made and new perspectives are gained. The history of the world is a testament to the resilience of the human spirit and the power of our collective efforts to shape a better future. It is a story that we must all know, for it is the story of us.

Revision of Appropriation Structure and Transfers in the  
1958 Estimates

In the interest of simplifying budgetary presentation for the Forest Service, reducing the number of separate appropriation items and facilitating work throughout the Forest Service, particularly in the field, a thorough study has been made of the appropriation and activity structure of the Service. As a result the 1958 Budget proposes a substantial revision in the appropriation and activity structure and appropriation language. This new structure is explained in the following statement and the attached table.

Forest Protection and Utilization

It is proposed to establish a new mainhead appropriation item entitled "Forest Protection and Utilization" which combines three major subappropriations, as follows:

<u>Proposed</u>	<u>Present</u>
FOREST PROTECTION AND UTILIZATION	SALARIES AND EXPENSES
(a) Forest Land Management .....	(a) National forest protection and management (b) Fighting forest fires (c) Control of forest pests
	(ACQUISITION OF LANDS, WEEKS ACT
(b) Forest Research	No change, except that item becomes a sub-appropriation under "Forest Protection and Utilization" rather than under the old "Salaries and Expenses."
(c) State and Private Forestry	No change, except that item becomes a sub-appropriation instead of a separate mainhead appropriation.

The proposed structure under this new mainhead appropriation reduces 3 mainhead appropriations to 1, and 4 subappropriations to 3. The grouping of subappropriations under the new mainhead appropriation falls into the three major Forest Service activities namely:

- (1) Forest Land Management--National Forest protection and administration, including submarginal lands, forest pest control (including state and private forest lands), and land acquisition under the Weeks Act. Funds for forest roads and trails would still be reflected under a separate appropriation.
- (2) Forest Research
- (3) State and Private Forestry Cooperation

In addition to the changes in appropriation structure indicated above, the new appropriation language proposes to merge annually the funds appropriated under the special (receipt) item "Cooperative Range Improvements" with those appropriated under "Forest Land Management"; and to merge the permanent appropriation of 10% of forest receipts for forest roads and trails with the annual appropriation "Forest Roads and Trails." These changes will improve and clarify budgetary presentation and will materially simplify program administration and fiscal operations and procedures. These proposed changes are discussed in more detail in the "Explanation of Changes in Language" later in these notes.



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P R E S E N T   S T

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Appropriation Items  
or  
Financial Projects

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SALARIES AND EXPENSES:

1. National forest protection and management
  - a. Resource protection and use .....
  - b. Resource development .....
  - Total .....
2. Fighting forest fires .....
3. Control of forest pests:
  - a. White pine blister rust control .....
  - b. Forest pest control .....
  - Total .....
4. Forest research:
  - a. Forest and range management research .....
  - b. Forest protection research .....
  - c. Forest products research .....
  - d. Forest resources research .....
  - Total .....

ACQUISITION OF LANDS FOR NATIONAL FORESTS:

STATE AND PRIVATE FORESTRY COOPERATION:

1. Cooperation in forest fire control .....
2. Cooperation in forest tree planting .....
3. Cooperation in forest management and .....
4. General forestry assistance .....
- Total .....

Total, Annual Appropriations .....

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## FOREST SERVICE

(Based on Fiscal Year 1957 Appropriations)

PRESENT STRUCTURE		PROPOSED STRUCTURE														
		FOREST PROTECTION AND UTILIZATION														
Appropriation Items or Financial Projects	Total F.Y.1957 Appropriations	Sub- appropriation	Financial Project				Sub- appropriation	Financial Project				Sub- appropriation	Financial Project			
		Forest Land Management	National forest protection and management	Fighting forest fires	Insect and disease control	Acquisition of lands	Forest Research	Forest and range management research	Forest protection research	Forest products utili- zation research	Forest resources research	State and Private Forestry Cooperation	Cooperation in forest fire control	Cooperation in forest tree planting	Cooperation in forest man- agement and assistance	General forestry
SALARIES AND EXPENSES:																
1. <u>National forest protection and management:</u>																
a. Resource protection and use .....	\$41,585,750:															
b. Resource development .....	2,715,000:															
Total .....	44,300,750:	44,145,750:	44,145,750:				155,000:	155,000:								
2. <u>Fighting forest fires</u> .....																
	5,250,000:	5,250,000:		5,250,000:												
3. <u>Control of forest pests:</u>																
a. White pine blister rust control .....	2,734,000:			2,734,000:												
b. Forest pest control .....	2,386,000:			2,386,000:												
Total .....	5,120,000:	5,120,000:		5,120,000:												
4. <u>Forest research:</u>																
a. Forest and range management research .....	5,182,816:							4,913,734:		269,082:						
b. Forest protection research .....	1,711,222:							1,711,222:								
c. Forest products research .....	1,679,801:								1,679,801:							
d. Forest resources research .....	1,426,161:									1,426,161:						
Total .....	10,000,000:						10,000,000:	4,913,734:	1,711,222:	1,948,833:	1,426,161:					
ACQUISITION OF LANDS FOR NATIONAL FORESTS (Weeks Act) .....																
	100,000:	100,000:				100,000:										
STATE AND PRIVATE FORESTRY COOPERATION:																
1. Cooperation in forest fire control .....																
	10,025,000:											10,025,000:				
2. Cooperation in forest tree planting .....																
	1,000,000:												1,000,000:			
3. Cooperation in forest management and processing .....																
	1,000,000:														1,000,000:	
4. General forestry assistance .....																
	165,000:															165,000:
Total .....	12,190,000:											12,190,000:	10,025,000:	1,000,000:	1,000,000:	165,000:
Total, Annual Appropriations .....	76,960,750:	54,615,750:	44,145,750:	5,250,000:	5,120,000:	100,000:	10,155,000:	5,063,734:	1,711,222:	1,948,833:	1,426,161:	12,190,000:	10,025,000:	1,000,000:	1,000,000:	165,000:





The revised structure under the subappropriation "Forest Research" reflects a transfer of \$269,082 from Forest and Range Management Research to Forest Products Utilization Research at Forest Experiment Stations. In 1955, Congress provided an increase of \$515,000 for Forest Research for investigations in forest management, including harvesting and utilization studies in specific forest regions and localities. In 1956, Congress further provided an increase of \$470,000 for Forest Research for the same general purposes.

It was not feasible, during the period of developing the program for the utilization work, to make a clear separation of funds for it from those for research in forest management and consequently the total of these increases was carried in and reported under the activity "Forest and Range Management Research." Now, however, such separation has been made. The funds going into the utilization phases of the field program total \$269,082 for fiscal year 1957. In 1958 it is proposed to transfer this amount from the "Forest and Range Management Research" activity to the "Forest Products Utilization Research" activity. This work is conducted at the various regional forest and range experiment stations. This adjustment will result in more clearly reflecting the work being conducted and will facilitate the overall coordination of utilization work at the Forest Experiment Stations with that of the Forest Products Laboratory.

The 1958 estimates also propose a transfer within the appropriation "Forest Protection and Utilization, Forest Service" of \$155,000 to the subappropriation "Forest research" from the subappropriation "Forest land management." This involves \$65,000 relating to the program in the Tropical region and \$90,000 relating to construction and maintenance of improvements.

The Forest Service program in the Tropical Region is now being reoriented and the activities which have been handled as National Forest Administration are being incorporated with and placed under the administration of the Tropical Forest Research Center. From now on the total program will emphasize Research programs, including pilot operations, testing and demonstration of research findings. The entire Luquillo National Forest is being designated as an Experimental Forest. The area will be used not only for detailed research studies but a major part will be devoted to the demonstration and application of research results and recommendations. In view of the changed objectives and the necessity for carrying on all activities from the point of view of research and demonstration, the National Forest Protection and Management funds which have helped to finance the Tropical unit now more properly belong in the Research subappropriation. The transfer will facilitate financial management in carrying out the research and demonstration program on the Experimental Forest. The same employees are doing the total integrated job and for many of the tasks it is difficult to draw a line for determination of appropriation responsibilities. In view of the broader objectives of the reoriented program it is advisable to make the appropriation transfer.

The transfer of \$90,000 represents the amount of "Forest Land Management" funds which is currently budgeted for construction and maintenance of forest research improvements. In the past these improvements have been financed both from the "National Forest Protection and Management" and the "Forest Research" subappropriations. It is the intent of language proposed for 1958 that each appropriation will finance the construction and maintenance of improvements related to work under each appropriation. The proposed transfer will result in the approximate same amount being available for forest research improvements but this amount will be shown under the applicable appropriation.

Detailed Breakdown of Functional Projects Under  
"Forest Land Management"

In order to provide more information on the amounts used and estimated for the various functions within the appropriation "National forest protection and management", the justifications have for many years included a functional project breakdown. As a part of the review and analysis of the appropriation structure of the Forest Service, the item "National forest protection and management" becomes an activity under the subappropriation "Forest Land Management". It is proposed to continue to break down this item by functional projects in order to provide more complete and informative data on the requirements for this appropriation. The proposed breakdown is basically the same as that presently used. A few changes are proposed in order to reflect more accurately the manner in which the funds are used at the field level. There is attached a table reflecting the proposed revision of the functional project structure. The significant changes are explained as follows:

1. Recreation-Public Use

In the past, funds for this purpose have been listed under two separate functions. The major portion was under the item "Sanitation and care of public campgrounds." In addition, however, a portion of the funds shown for "Maintenance of improvements" was available for, and used for, the maintenance of public campground improvements. Under the proposed structure, the amount previously listed under "Maintenance of improvements" has been transferred to the "Recreation-Public Use" item. Thus, all funds available for this activity will appear in one place including sanitation and care, maintenance and construction of campground facilities, and related general administration.

2. Construction of Improvements

In the past, this item represented a nominal amount for general purpose construction. In addition, however, funds shown for resource management jobs such as timber, range, fire, etc., were used for construction if such construction directly benefited the particular resource activity. Under the proposed system, all funds for structural improvements related to fire and general purposes will be combined with the proposed new function of "Structural improvements for fire and general purposes." This new project also combines construction and maintenance. This is desirable because the accounting records for the Forest Service under construction include reconstruction and betterment to existing improvements and it is not possible to readily determine in advance the exact division between maintenance and construction. It should be noted that maintenance and construction of recreation, range, and soil and water improvements are included under those projects because they readily can be charged directly thereto, and normally such improvements do not benefit the work of other functional activities.

3. Forest Rangers, forest supervisors, and other multiple activity Employees

This functional activity has been changed to include only the time and related expense of the approximate 760 Forest Rangers while engaged in the work related to their territorial responsibility for all activities performed at the ranger district level of the Forest Service organization. This group of employees is



retained as a separate functional item because they work on all activities, and the time expended is as actual doers of the day-to-day ranger caliber jobs which require attention regardless of variation in other program funds.

Removed from this functional item are the group of employees representing administrative expense and whose time and related expense can readily be distributed on an equitable formula basis to the functional activity or appropriation accounts which are benefited. Furthermore, this change will result in more accurately reflecting costs and tie in more nearly with current operating procedure. A large portion of the employees being eliminated from this group have been handled on a so-called offset basis as it related to other appropriations and activities. For example, Chiefs of the Service Divisions of Fiscal, Personnel, and Operation, both in the Regional Offices and the Washington Office, were charged to this function on the accounting records along with rangers and other multi-purpose employees. However, the distribution to benefiting appropriations of their salary and expenses along with the salaries of all other employees in these divisions was determined on a series of formulae designed to insure appropriation integrity. Under these formulae the total salary and expense of such divisions including the Division Chief might compute to 60% against the National Forest Protection and Management appropriation and the remaining 40% against other benefiting appropriations. Under past practice, the Division Chiefs would then be charged, on the accounting records only to Protection and Management with no equitable charge being made to other benefiting appropriations. Such practice does not reflect a totally accurate picture and this will be corrected under the proposed new methods. It means, in summary, that all employees previously included in this function (except forest rangers) will be charged to the appropriations and activities which benefit from the work performed by them.



1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes the need for transparency and accountability in financial reporting.

2. The second part of the document outlines the various methods and techniques used to collect and analyze data. It includes a detailed description of the experimental procedures and the statistical analysis performed.

3. The third part of the document presents the results of the study. It includes a series of tables and graphs that illustrate the findings of the research. The data shows a clear trend in the relationship between the variables studied.

4. The fourth part of the document discusses the implications of the findings and provides recommendations for future research. It suggests that further studies should be conducted to explore the underlying mechanisms of the observed phenomena.

5. The fifth part of the document is a conclusion that summarizes the main points of the study. It reiterates the importance of the research and the need for continued investigation in this field.

6. The sixth part of the document is a list of references that cites the works of other researchers in the field. It includes a variety of sources, including books, journal articles, and online resources.

7. The seventh part of the document is an appendix that contains additional information related to the study. It includes a list of abbreviations and a glossary of terms used throughout the document.

8. The eighth part of the document is a list of figures and tables that are included in the study. It provides a brief description of each figure and table and indicates the page number where it can be found.

9. The ninth part of the document is a list of acknowledgments that thanks the individuals and organizations that provided support and assistance during the course of the study.

10. The tenth part of the document is a list of appendices that contains additional information related to the study. It includes a list of abbreviations and a glossary of terms used throughout the document.

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<u>White pine blister rust control:</u>	:
Leadership, coordination, and	:
technical direction .....	:
Control work on national forests ...	:
Control work on Interior lands .....	:
Control work on State and	:
private lands .....	:
Subtotal .....	:
<u>Forest pest control:</u>	:
Detection and appraisal surveys ....	:
Control of forest pests .....	:
Subtotal .....	:
Total, Control of forest pests .....	:
ACQUISITION OF LANDS FOR NATIONAL FORESTS,	:
WEEKS ACT .....	:
Total, functions in proposed sub-	:
appropriation "Forest Land Management"	:5

1/ No change in functional structure.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud. The text also mentions the need for regular audits and the role of independent auditors in ensuring the reliability of the data.

2. The second part of the document focuses on the challenges faced by organizations in implementing effective internal controls. It highlights the need for a strong culture of compliance and the importance of training employees on the proper use of resources. The text also discusses the role of management in setting the tone at the top and the need for clear communication of policies and procedures.

3. The third part of the document addresses the issue of data security and the need to protect sensitive information from unauthorized access. It discusses the various threats to data security, such as malware and phishing, and the importance of implementing robust security measures to mitigate these risks. The text also mentions the need for regular security assessments and the role of incident response plans in handling breaches.

4. The fourth part of the document discusses the importance of transparency and the need to provide clear and concise information to stakeholders. It emphasizes the role of financial reporting in providing a clear picture of the organization's financial performance and the need for accurate and timely data. The text also mentions the importance of disclosing any potential conflicts of interest and the need for a strong governance structure to oversee the reporting process.

5. The fifth part of the document discusses the importance of ethical behavior and the need to ensure that all transactions are conducted in a fair and honest manner. It emphasizes the role of ethics in building trust and the importance of establishing a code of conduct that guides the behavior of all employees. The text also mentions the need for regular ethics training and the role of ethics committees in overseeing the implementation of the code of conduct.



## FOREST SERVICE, FISCAL YEAR 1958

(Based on Fiscal Year 1957 Appropriations - Adjusted)

1/ No change in functional structure.



(a) Forest Protection and Utilization

	<u>Forest Land Management</u>	<u>Forest Research</u>	<u>State and Private Forestry Cooperation</u>	<u>Total</u>
Appropriation Act, 1957 (Adjusted) - and Base for 1958 .	a/ \$55,315,750	\$10,155,000	\$12,190,000	a/ \$77,660,750
Budget Estimate, 1958 .....	a/ <u>73,430,000</u>	<u>11,325,000</u>	<u>13,245,000</u>	a/ <u>98,000,000</u>
Increase .....	<u>+18,114,250</u>	<u>+1,170,000</u>	<u>+1,055,000</u>	<u>+20,339,250</u>

a/ Includes \$700,000 by transfer from the item "Cooperative Range Improvements."

SUMMARY OF INCREASES AND DECREASES, 1958

Forest Land Management:

To provide an increase in the annual forest timber cut to a total of 8.75 billion board feet .....	+\$2,091,350
To accelerate the reforestation program on national forest land ..	+305,400
To provide adequate recreation facilities and services to accommodate present and future public use in a satisfactory manner .....	+7,748,100
To help cope with management aspects of the growing use of the national forest wildlife resource .....	+105,100
To provide inventory and plans for range allotments .....	+104,600
To step up the range revegetation program on depleted national forest range lands .....	+176,000
To recondition and maintain improvements on national forest range allotments .....	+50,500
To make better progress in checking erosion, re-establish vegetative cover, and improve the water control capacity on lands requiring restorative treatment .....	+151,100
To administer greatly increased national forest land uses, to properly identify, survey, mark, and perpetuate national forest boundary lines, and for ownership consolidation through boundary adjustment and land exchanges .....	+1,508,000
To provide for the establishment of about 35 new ranger districts.	+311,600
For rehabilitation work on land utilization projects in the dust bowl area .....	+101,400
To meet the increased fire hazards and risks from greater use of all forest resources, reduce man-caused fires, and provide for development and use of new equipment and methods, including air support and attack .....	+508,800
To provide housing for employees in remote areas and other miscellaneous structures and to accelerate the level of maintaining improvements .....	+3,279,900
For contributions to the retirement fund pursuant to Public Law 854 .....	+1,672,400
Subtotal .....	<u>+18,114,250</u>



Forest Research:

To expand research in forest, range and watershed management .....	+128,800
To develop methods of preventing severe lightning fires and to increase the efficiency of firefighting through use of the helicopter .....	+51,400
To expand research on the cause and control of forest diseases that kill important timber species .....	+51,100
For research in forest products utilization .....	+178,900
To accelerate the forest survey to provide more up-to-date and adequate information on timber resources .....	+309,800
For contributions to the retirement fund pursuant to Public Law 854 .....	+450,000
Subtotal .....	<u>+1,170,000</u>

State and Private Forestry Cooperation:

For cooperation with States in procurement, production, and distribution of forest tree seedlings .....	+300,900
For additional cooperation in providing technical services to small woodland owners .....	+501,900
For general forestry assistance to agencies and individuals with specific forest management and forest utilization problems .....	+210,800
For contributions to the retirement fund pursuant to Public Law 854 .....	+41,400
Subtotal .....	<u>+1,055,000</u>

PROJECT STATEMENT

Project	1956	1957 (estimated)	Increase or decrease		1958 (estimated)
			Retirement Costs (P.L. 854)	Other	
1. Forest					
Land Manage-					
ment:					
a. National					
forest pro-					
tection and					
management:					
(1) Timber					
resource					
management					
(a) Sales					
adminis-					
tration					
and man-					
agement..	\$8,577,785	\$10,145,000	+\$543,650	+\$2,091,350(1)	\$12,780,000
(b) Refor-					
estation					
and stand					
improvement:	1,078,786	1,850,000	+29,600	+305,400(2)	2,185,000
(2) Recrea-					
tion - pub-					
lic use ..	2,319,983	3,700,000	+51,900	+7,748,100(3)	11,500,000

Project	1956	1957 (estimated)	Increase or decrease		1958 (estimated)
			Retirement Costs (P.L. 854)	Other	
(3) Wildlife: habitat management :	282,772:	385,000:	+19,900	+105,100 (4):	510,000
(4) Range resource management:	:	:	:	:	:
(a) Manage- ment .... :	1,049,274:	1,400,000:	+65,400	+104,600 (5):	1,570,000
(b) Revege- tation .. :	699,187:	1,000,000:	+14,000	+176,000 (6):	1,190,000
(c) Improve- ments a/. :	1,206,748:	1,235,000:	+14,500	+50,500 (7):	1,300,000
(5) Soil and: water man- agement .. :	395,069:	640,000:	+18,900	+151,100 (8):	810,000
(6) Mineral claims, leases, and: other land uses .....	1,618,357:	1,680,000:	+92,000	+1,508,000 (9):	3,280,000
(7) Ranger District management :	6,376,400:	6,400,000:	+338,400	+311,600(10):	7,050,000
(8) Land utilization: projects . :	999,873:	1,050,000:	+38,600	+101,400(11):	1,190,000
(9) Forest fire pro- tection .. :	10,260,742:	10,500,000:	+291,200	+508,800(12):	11,300,000
(10) Struc- tural im- provements for fire and general: purposes (construc- tion and maintenance)	3,431,834:	4,860,750:	+68,950	+3,279,900(13):	8,209,600
Subtotal, National forest pro- tection and: management :	38,296,810:	44,845,750:	+1,587,000	+16,441,850	62,874,600
b. Fighting forest fires:	10,500,000:	5,250,000:	[+26,500]	- -	5,250,000
c. Insect and: disease con- trol:	:	:	:	:	:
(1) White pine blister rust con- trol .....	2,695,725:	c/2,734,000:	+46,000	- -	c/2,780,000

(Continued on next page)

Project	1956	1957 (estimated)	Increase or decrease		1958 (estimated)
			Retirement Costs (P.L. 854)	Other	
(2) Other pest con- trol .....	3,413,516:	2,386,000:	+39,000	- -	2,425,000
Subtotal,					
Insect and disease ..					
control ..	6,109,241:	5,120,000:	+85,000	- -	5,205,000
d. Acquisition of lands					
(Weeks Act)	189,478:	100,000:	+400	- -	100,400
Total, Forest: Land Manage- ment .....	55,095,529:	55,315,750:	+1,672,400	+16,441,850	73,430,000
2. Forest Re- search:					
a. Forest and range man- agement research ..	4,394,461:	5,068,734:	+222,466	+128,800(14):	5,420,000
b. Forest protection research:					
(1) Forest fire con- trol re- search ...	258,328:	325,562:	+14,538	+51,400(15):	391,500
(2) Forest insect re- search ...	624,369:	771,499:	+34,401	- -	805,900
(3) Forest disease research ..	498,744:	614,161:	+27,339	+51,100(16):	692,600
Subtotal,					
Forest pro- tection research ..	1,381,441:	1,711,222:	+76,278	+102,500	1,890,000
c. Forest pro- ducts utili- zation re- search:					
(1) Forest Products Laboratory	1,082,187:	1,434,828:	+64,272	+153,400	1,652,500
(2) Forest experiment stations ..	482,345:	514,055:	+22,945	+25,500	562,500
Subtotal,					
Forest pro- ducts util- ization research ..	1,564,532:	1,948,883:	+87,217	+178,900(17):	2,215,000

(Continued on next page)



Project	1956	1957 (estimated)	Increase or decrease		1958 (estimated)
			Retirement Costs (P.L. 854)	Other	
d. Forest re- sources re- search:					
(1) Forest survey ...	859,362	1,049,374	+47,126	+309,800(18)	1,406,300
(2) Economic research ..	151,527	376,787	+16,913	- -	393,700
Subtotal, For- est resources:					
research ..	1,010,889	1,426,161	+64,039	+309,800	1,800,000
Total, Forest: Research ..	8,351,323	10,155,000	+450,000	+720,000	11,325,000
3. State and Private Fores- try Coopera- tion:					
a. Cooperation in forest fire control:	10,039,700	10,025,000	+18,000	- -	10,043,000
b. Coopera- tion in for- est tree planting ..	493,576	1,000,000	+7,100	+300,900(19)	1,308,000
c. Cooperation in forest management and proces- sing .....	685,957	1,000,000	+8,100	+501,900(20)	1,510,000
d. General forestry assistance	151,694	165,000	+8,200	+210,800(21)	384,000
Total, State and Private Forestry Cooperation	11,370,927	12,190,000	+41,400	+1,013,600	13,245,000
Total, Forest Protection and Utiliza- tion .....	74,817,779	77,660,750	+2,163,800	+18,175,450	98,000,000
Unobligated balance no longer avail- able .....	431,761	- -	- -	- -	- -
Unobligated balance car- ried forward	42,899	- -	- -	- -	- -
Total retire- ment costs (P.L. 854) ..	- -	- -	[+2,190,300]	+ [+287,900]	[2,478,200]
Total avail- able .....	75,292,439	77,660,750	+2,163,800(22)	+18,175,450	98,000,000

(Continued on next page)



Project	1956	1957 (estimated)	Increase or decrease		1958 (estimated)
			Retirement Costs (P.L. 854)	Other	
Transfer in					
1957 Estimates to					
"Salaries and					
Expenses,					
Office of the					
Secretary,					
Agriculture"	9,912:	- -	- -	- -	- -
Transfer from:					
"Cooperative					
Range Improve-					
ments" (trans-					
fer shown in:					
1956 and 1957:					
for compara-					
bility) ....	-728,722:	-700,000:	- -	- -	-700,000
Total appro-					
priation or					
estimate ...	74,573,629:	76,960,750:	+2,163,800	:+18,175,450	: 97,300,000
Transfer in					
the 1958 Esti-					
mates from					
appropriations					
shown in table					
of proposed					
consolidation:					
following the:					
summary of					
appropria-					
tions .....	-74,573,629:	-76,960,750:			
Total appro-					
priation					
(adjusted) .	- -	- -			

- a/ Includes amounts transferred from "Cooperative Range Improvements".
- b/ In addition, \$1,921,386 was obligated for fighting forest fires from "Expenses, Brush Disposal," which was adjusted in fiscal year 1957 by a transfer of obligations to "Fighting Forest Fires" and a repayment to "Expenses, Brush Disposal".
- c/ Includes \$355,900 to be allocated to the Department of the Interior.

#### INCREASES AND DECREASES

The program increase of \$16,441,850 for the subappropriation "Forest Land Management" relates to the use of all national forest resources which continues to increase with population and the expanding economy of the country. It is essential that the protection, management, and development of these resources go forward in an orderly and balanced manner to insure full value of a sound multiple-use program. The increase consists of;

(1) An increase of \$2,091,350 to provide for an increase in the annual cut of national forest timber to a total of 8.75 billion board feet.

Need for Increase: The increased funds recommended will make it possible to market an additional billion board feet of national forest timber which is ready for cutting. This accelerated rate of cutting will be readily absorbed by the forest products industries which are having difficulties in obtaining other sources of stumpage supply. This increased rate of cutting will bring in substantial returns to the Treasury and result in improved conditions in the growth and thrift of national forest timber stands.

At today's average value, receipts to the Treasury from 1 billion board feet are about \$17,000,000, of which 65% would be deposited into the general fund of the Treasury. This estimate of financed needs to cut 8.75 billion board feet of timber is based on detailed estimates for each national forest working circle, which includes volume expected to be cut by sales size classes and an estimate of project costs for sale administration in accordance with service-wide costs study.

A portion of the increase will be used to meet increased costs to handle the currently planned cut of 7.75 billion board feet. Costs have gradually increased during the past few years and it is anticipated that by fiscal year 1958 the full impact of greater costs of doing business will average about 10 cents per thousand board feet. Included in this increase is contemplated additional personnel costs for timber sale employees in order to permit payments more in line with those paid in private industry.

Plan of Work: Expected cut in fiscal year 1957 is 7.75 billion board feet at an over-all cost for sale administration (exclusive of funds used primarily for management plans and inventories) of \$8,600,000 or an average of \$1.11 per thousand board feet. Over-all cost for a cut of 8.75 billion board feet in fiscal year 1958 is \$1.21 per thousand board feet (exclusive of retirement costs). The increased cost will apply to continuation of the 1957 rate of cutting, as well as to the 1 billion board feet increase proposal.

Distribution of the \$2,091,350 increase requested is estimated as follows:

	<u>AMOUNT</u>
a. Increased cut 1 billion board feet at \$1.21 per thousand .....	\$1,210,000
b. Increase in average cost of sale administration for balance of cut 7.75 billion board feet at \$0.10 per thousand .....	775,000
c. Allowance for special advance work on sale promotion for pulp mill projects in Montana and appraisal investigations, including mill scale studies .....	15,000
d. Contributions to the retirement fund .....	<u>91,350</u>
TOTAL .....	2,091,350

(2) An increase of \$305,400 for an accelerated reforestation program.

Need for Increase. This increase is needed to meet the requirements for an accelerated reforestation program on national forest lands which are now idle and nonproductive and to promptly plant or direct-seed recently burned areas. In order to accelerate the present reforestation program,



it will be necessary to (1) increase the production of planting stock at existing Forest Service nurseries, (2) build up the supply of forest tree seed in "seed banks," and (3) to reduce and control excess populations of porcupines which are doing damage to established reproduction and pole timber. Except for the nurseries in the Southern States, seeding this year will not result in stock ready for planting until two to four years hence. Since many important commercial tree species produce seed only once in several years, it is essential to have a reserve supply of seed collected during years when seeds are in abundance. Plentiful seed supplies should also be available for direct seeding of burned areas when feasible.

There is a large increase in porcupine populations in many of the national forests and a part of the increase is needed to control the excess population in many areas.

Plan of Work: First priority in planting is to restock recently burned areas before competing brush growth becomes fully established. Planting of such areas will save considerable in site preparation if done fairly promptly following the fires. In addition, it will be possible to make a beginning toward reducing the backlog of approximately 4,567,000 acres of commercial forest lands within the national forests in need of planting. The existing organization and plan of work will be expanded moderately to plant more seed in the 12 existing nurseries, to accelerate the planting program, and to control porcupine populations where damage is being done to established reproduction and pole timber. Much of the seed for the "seed bank" will be supplied by private contractors.

(3) An increase of \$7,748,100 to provide adequate recreation facilities and services to accommodate present and future public use in a satisfactory manner.

Problem and Need: In calendar year 1955 the national forests received 45.7 million visits for such outdoor activities as picnicking, camping, skiing, swimming, hunting, fishing, hiking, and mountain climbing. The Forest Service operates and maintains some 4,950 recreation areas which accommodate 49 percent of the total recreation use of the National Forests. These areas provide simple facilities for safety, sanitation and convenience, such as toilets, water systems, tables, fireplaces, parking areas and some shelters, bathhouses and beaches. In addition to the use at improved recreation areas, many fishermen, hunters and hikers use large sections of the national forests where there are no improved recreation areas, and this use, which is 41 percent of the total use, results in sanitation, cleanup and fire problems. The other 10 percent of the recreation use centers at organization camps, resorts and summer homes.

Recreation use on the national forests has increased 150 percent since 1946. Funds available since 1946 for sanitation and maintenance of national forest recreation areas have not kept pace with the large increase in use, and as a consequence recreation facilities have deteriorated and are inadequate to accommodate the volume of use they received. Practically no funds have been available for the construction of new areas needed to relieve overcrowded conditions. The overflow from crowded recreation areas spreads to unimproved areas, thereby creating serious fire and pollution problems. The public is not satisfied with the number or condition of recreation areas and facilities and is demanding better facilities and better care.

Studies by the Forest Service and other agencies indicate that recreation use will continue to increase rapidly and that by 1962 the national forests will receive 66,000,000 visits.

The Forest Service has undertaken a field survey and study of the recreation situation to determine the kind and type of facilities which should be provided by the Federal Government, what is needed to accommodate the present and future recreation use in a satisfactory manner, and what it would cost during the period fiscal year 1958 through fiscal year 1962. This survey showed:

1. Present recreation facilities are in poor repair and major maintenance and rehabilitation are necessary. At many areas better sanitary facilities and water systems are urgently needed to safeguard public health. It will require \$15,200,000 to put existing recreation areas in safe and satisfactory condition for public use. Thereafter maintenance requirements will be \$1,400,000 on the present areas and will increase proportionately as the needed new areas are constructed.
2. The present 24.5 million man-days' use at camp and picnic areas is 39 percent above the safe capacity of the 41,400 family units available at these areas, and 16,300 additional family units are needed to accommodate the present use in a safe and satisfactory manner. Allowing for some construction of family units in fiscal year 1957, 40,500 family units must be constructed by 1962 to accommodate the expected use at that time. Construction of these units, and the development of other recreation facilities, will cost \$39,200,000.
3. Sanitation and cleanup at improved recreation areas must be stepped up to satisfactory standards and must keep up with increasing use. The cost of doing this work will be \$1,500,000 at present and will rise to \$2,800,000 on the basis of the volume of use expected by 1962.

Cleanup, sanitation and supervision are also urgently needed in the back-country hunting and fishing areas to prevent pollution and fire hazards. It will require from \$500,000 to \$600,000 a year to do a satisfactory job on the 100,000,000 or more acres used by hunters, fishermen, and hikers.

4. A high order of administration, planning, and supervision is necessary to provide adequate management of the recreation resources. Planning of new recreation areas and potential future areas and integrating this with other uses will require special emphasis. The cost of doing this work will be \$1,500,000 to \$2,100,000 per year.

On the basis of the survey, the Forest Service developed a 5-year program for the management and development of the recreation resources. The goals of this program are:

1. Rehabilitation of existing recreation facilities so that they will be safe and usable.
2. Planning and development of new recreation areas and facilities to



alleviate present overuse and to accommodate expected future use as it develops.

3. A satisfactory standard of current sanitation, cleanup, maintenance, and supervision of all recreation areas and recreation use.

The 5-year program necessary to meet these goals is described in detail in a brochure which outlines the methods used in making this survey, the policies which were used as guidelines in developing the program, and justification for the various cost estimates. The scope of the program by years is as follows:

F.Y.	Adminis- tration super- vision and planning	Sanita- tion & cleanup, improved areas	Sanita- tion & cleanup, unimproved areas	Mainte- nance of facili- ties	Capital Investment		Totals
					Rehabili- tation	New areas	
(In thousands)							
1958	\$1,500	\$1,500	\$500	\$1,400	\$3,600	\$3,000	\$11,500
1959	1,500	1,800	500	1,400	3,600	6,700	15,500
1960	1,800	2,100	500	1,800	3,100	10,200	19,500
1961	2,000	2,400	600	1,900	2,900	9,700	19,500
1962	2,100	2,800	600	1,900	2,000	9,600	19,000
					15,200	39,200	85,000

The increase requested for fiscal year 1958 added to the \$3,700,000 available in fiscal year 1957 will provide \$11,500,000 for the first year of the 5-year program.

These funds will be used substantially in accordance with the above tabulation for administration, supervision, planning, sanitation, cleanup, and maintenance of recreation areas and facilities on the national forests and for capital investment needed for the rehabilitation and construction of new areas.

Priority will be given to the rehabilitation of sanitary facilities and water systems and to the construction of new areas in locations where there is the greatest danger of fire hazard and pollution resulting from recreation use on unimproved areas. Emphasis will also be given to sanitation and cleanup at unimproved areas used by fishermen, hunters, and hikers.

(4) An increase of \$105,100 for wildlife staff assistance in the field organization to help cope with the growing use of the national forest wild life resource and to meet the expanding and complex habitat management responsibilities and cooperative wildlife management job loads.

Need for increase: The American public is making intensive use of the national forests for observation and pursuit of the fish, game, and non-game wildlife resources. One-fourth of the total recreational visits are for the purpose of fishing and hunting. Thus a large proportion of the public is directly interested in the wildlife on the national forests and any management decisions that affect the welfare of these forest animals. This situation creates added work load through continuous need to consider proposals from sportsmen and other forest users, in the explanation of management policies and in dealing with appeals and protests. The sportsmen and conservation groups are large and well organized, and take a very active interest in the wildlife and over-all administration of the national forests.

The Forest Service cooperates with the State Fish and Game Departments. The States administer the laws relating to the protection and utilization of the fish and game resource and the Forest Service manages the national forest habitat where the fish and game are produced and harvested. The States have increased the number of wardens and technicians, and are by comparison to the Forest Service well-financed for surveys, plans, and projects. The Forest Service must deal directly with 44 State Departments, which requires working with each Director, a Commission normally of five or more members, a technical staff of the Director's Office, and many local biologists, wardens, and other State employees. Approximately 20 million dollars of State funds for 1955 were spent on State activities relating to cooperation with the Forest Service. This creates a heavy work load which cannot be handled adequately by existing staff.

In general, game species are benefited by changes of the forest cover. The cutting of timber, for example, can alter the food and cover conditions to the benefit of game. However, the benefits to wildlife are assured and often greatly enhanced by purposeful planning with regard to the location, size, and intensity of the cutting. With the expansion of the timber sale business there is a corresponding need for management attention to assure that wildlife values are considered and adjustments provided where needed. The size of this job is indicated by the cut of nearly 7 billion board feet from 1,644,000 acres of national forest land during fiscal year 1956. Although timber harvesting has been cited, nearly all uses of the national forests have intensified, and the need for coordination accentuated proportionately.

Plan of Work: This increase will be used to employ additional staff specialists at the regional, forest, and ranger level to give attention to (1) development and application of coordination measures in connection with the demands for an intensified program of managing the wildlife habitat; (2) expand the level of cooperative activity with the States; and (3) meet the increased public demands associated with sportsmen and conservation group proposals, complaints, and associated interests.



(5) An increase of \$104,600 to provide inventory and plans for range allotments on the national forests.

Problem and Need: These funds are needed primarily to provide technically trained help for appraisal and plan development work and to strengthen administration on grazing units. Part of the money is needed to control noxious farm weeds on national-forest land that threaten to reinfest adjacent and downstream cultivated farms.

It is highly desirable to complete the job now under way within the next five or six years, since proper land management cannot be achieved without an adequate resource inventory, and because valuable watersheds and important grazing areas will be neglected until basic inventories and plans are obtained. The \$350,000 increase in this item last fiscal year will contribute to the completion of surveys and plans on about 820 allotments and provide a little additional time for other necessary administrative phases of range resource management. It is expected that the \$104,600 will step up allotment analyses to about 940 plans annually and place this phase of the job on about a six-year basis. In addition, the increase will contribute toward "on-the-ground" management and cooperation with users which is badly needed to place administration of national forest range land on an "acre" instead of a "mountain" management basis. In noxious farm weed control, only projects of a most serious nature will be selected, since the size of the job precludes a complete treatment. To be effective the work of the Forest Service in noxious farm weed control will need to be closely coordinated with State and county programs.

There are 8,683 livestock allotments on the national forests of the United States. Of this number, surveys and plans, based upon the new concepts and procedures formulated in 1951, have been completed on approximately 880 units. On an additional 1,300 allotments, new surveys are not required at this time because present maps, plans, and other information are considered satisfactory. The proposed increase will permit stepping-up the work on the remaining 6,500 range allotments on which surveys and plans are inadequate as management tools to both the user and the administrator.

(6) An increase of \$176,000 to step-up the range revegetation program on depleted national forest range land.

Problem and Need: The restoration of non-productive grazing land within a reasonable period of time is important, since many of the areas in need of treatment are critical watersheds. Their productivity would add stability to livestock operations which depend upon national forest range for a portion of the year's feed requirement. Only under full production can the lands make their maximum contribution to the national welfare.

Seeding is needed on better than 3,000,000 acres of national forest land that is capable of restoration through known methods of revegetation. Because of advancement in seeding techniques and the development of more effective machinery the area in which treatment is practicable is increasing. In addition, noxious plants are dominating an estimated

2,400,000 acres of range land. The removal or thinning of this undesirable vegetation by proven mechanical and chemical procedures would provide considerably more forage for livestock and game use.

Under the present program approximately 80,000 acres can be restored to productivity annually. The requested increase for 1958 will provide for steady progress toward restoration of the unproductive national forest grazing areas.

(7) An increase of \$50,500 to recondition and maintain range improvements on national forest range allotments.

Problem and Need: While it is the policy of the Forest Service to encourage permittee participation in the maintenance of range facilities, a certain amount of maintenance must be done by the Forest Service to protect the public investment and to make the most effective use of the resource.

On the national forests, there are 28,648 miles of range fence and 18,248 water developments. These structures must be kept in good working order if the forage resource is to be efficiently utilized. The estimated needs for fiscal year 1958, along with permittee participation, will permit the Forest Service to make good headway in maintaining the structures more urgently in need of upkeep and repair.

(8) An increase of \$151,100 to make better progress in checking erosion, to re-establish vegetative cover, and improve the water control capacity on lands which require intensive restorative treatment in order to prevent damage both to soil and water resources.

Need for Increase: Lands in need of restorative treatment include severely burned land, unstable stream banks, abandoned roads and trails, and areas damaged in the past by overgrazing, logging, cultivation, road drainage, and mining. Because of location, steepness, or poor site these lands are commonly excluded from range and timber resource programs as poor risks for development because they are unsuitable for range or timber management. In many circumstances they are potential sources of flood damage, or constitute threats by erosion to physical improvements.

Plan of Work: Estimates of watershed rehabilitation work needed on the national forests include the following major items:

Restoration of eroded areas .....	2,025,000 acres
Slide and dune stabilization .....	30,000 acres
Road and trail stabilization .....	48,000 miles
Gully stabilization .....	21,000 miles

With the increase of \$151,100 it is estimated that the total program will provide for the restoration of 3,300 acres of depleted and gullied lands, the rehabilitation of 200 acres of sand dunes, the stabilization of 750 miles of eroding roads, and the clearing of debris from 15 miles of stream channels resulting from forest fires and subsequent windthrow and now threatening downstream residents and developments. It would allow for a progressive continuation of programs initiated in fiscal year 1957 with particular emphasis on improvement of critical areas in



such worth while projects as Trout Creek in Colorado, Beaver Creek in Arizona, the Siuslaw sand dunes in Oregon, the municipal watershed of Blanding, Utah, and the severely gullied timber lands in the Piedmont and Southeastern United States.

(9) An increase of \$1,508,000 to administer greatly increased national forest land uses, other than timber, forage or recreation, created by more people, more automobiles and more and better roads; better protect the greatly increased resource values from trespass, including theft; and more efficiently administer our national forest properties by mutually desirable ownership consolidation through boundary adjustments and land exchanges.

Problem and Need: The proposed increase is made up of four parts as follows:

- (a) An increase of \$260,000 to provide funds for carrying out the third year portion of the determination of surface rights on abandoned, invalid, dormant, and unidentifiable mining claims on national forest land as authorized by the Act of July 23, 1955. The procedure under this Act requires a thorough field examination of the selected area, a report and a request to the Bureau of Land Management for public notice. After publication of notice a complete mineral examination must be made by a competent mineral examiner of each mining claim for which a verified statement is filed. The Forest Service must appear with evidence at the public hearing held by the Bureau of Land Management to determine the surface rights of mining claimants.

With the funds appropriated in 1956 and 1957 it was possible to complete the plans of work outlined for those years. To meet the objective of completing the program in about ten years, it is necessary to complete the determination of surface rights on 30 areas annually involving an estimated 30,000 claims. Intensive field work for the first two years has revealed that the original estimate regarding the number of mining claims on national forest land was low and that there still remain over 200,000 claims to be processed under the Act of July 23, 1955, to provide for adequate multiple-use administration by the Forest Service.

- (b) An increase of \$572,000 to handle the issuing of special-use permits, mineral leases and other land activities to meet the expanding use of national forest land by the public.

Studies show that since 1950 the on-the-ground job load has increased 43 percent and no fund increases have been provided.

Maximum use of national forest lands by public, semi-public, or private organizations, and individuals is a Department objective of long standing. During the past 50 years, the Forest Service has issued special-use permits consistent with the multiple-use management principle. All uses of national forest land, other than for grazing of livestock and use of timber, come under this activity and are authorized by special-use permit or easement. These permits define the rights and obligations of the land user.

There are over a hundred different uses including summer homes, resorts, pastures, sawmills, TV sites, telephone lines, gas lines, etc. Over 55,000 permits and easements are now in force and each year about 7,000 new permits are issued. There are about 530 power project licenses or permits now in effect with additional applications being reported on at the rate of about 30 per year.

It is essential that these uses be integrated to the fullest practicable extent with the objectives of multiple-resource management plans. Adequate integration requires adjustment of resource management plans within the zone of influence of the projects. It requires study of proposed plans with suggestions, perhaps, to the developer as to revisions which may lessen adverse impacts on the forest without undue effect on the project. The plans for water storage structures authorized by Forest Service special-use permit require detailed review and approval to assure their safety and minimum disturbance to land values.

Close supervision is required to avoid land damages and unnecessary conflicts with other national forest uses in the area. Completed power and water storage projects, permitted uses, and mining claims must be inspected frequently to assure that their operation and maintenance comply with the law, and with the conditions of agreements, licenses, easements, or permits that affect national forest lands.

An average of 241 applications (mining claims) for patents has been referred to the Forest Service by the Bureau of Land Management each year for the past 5 years. Each claim must be examined by a competent mineral examiner to determine whether the patent requirements of the law have been met. An average of 117 claims have been clear-listed (not protested) each year for the past 5 years; the rest are protested and hearings are held by the Bureau of Land Management at which the Forest Service presents evidence. Because of the previous lack of mineral examiners, a considerable backlog of patent applications has developed. It is believed that the patent examination work will increase because of the Act of July 23, 1955, and will result in more patent applications.

Mineral leases also represent a heavy job load under this activity. The Government's program for encouraging the production of strategic minerals--particularly manganese and uranium--has more than tripled this activity in the past three years. Leases on acquired land are issued by the Bureau of Land Management, but the Forest Service must consent to the lease, check abstracts and title records to determine the Government's interest in the applied-for minerals, and administer the provisions of the lease relating to the prevention of surface damage. Most of these mining operations involve strip-mining methods and are located in watersheds which are the source of domestic water for towns in Virginia, Kentucky, and North Carolina, particularly. Close supervision is essential to assure that proper settling ponds



and check dams are installed and the area revegetated or reforested when mining is completed. On some ranger districts, strip-mining has increased the ranger's land-use work load several hundred percent.

As of June 30, 1955, there were 1,335 leases in force. The interest in oil and gas leases on lands reserved from the public domain continues to run high. There are now in effect approximately 6,100 oil and gas leases covering 6,000,000 acres of national forest land.

The disposal of mineral material under the Act of July 23, 1955, has increased the work load on the national forests. Each sale of materials where the value is estimated to be \$1,000 or more must be appraised and sold to the highest bidder. After sale the material must be measured to determine amount of payment. One permit for 200,000 yards of rock at 5 cents a yard has been issued in Montana. Another sale for a large amount of clay is pending.

The value of national forest resources and the wide variety of permits, leases, and easements make it imperative that a systematic effort be made to check on unauthorized uses and to initiate appropriate action to prosecute persons making unauthorized use of national forest land and resources.

- (c) An increase of \$416,000 to permit the establishment of an urgently needed systematic program to properly identify, survey, mark, and perpetuate the boundary line between national forest and intermingled or adjoining private lands.

Many of the present national forest boundary lines have not been remarked since original surveys during 1910-20, or since the Civilian Conservation Corps program of the early 1930's. Many are very difficult to locate and follow and this often results in both innocent and wilful trespass and theft. The amount of use of both national forest and adjoining private lands for various public purposes and for private residential or commercial developments has greatly intensified in the last decade. Mineral developments under reservations are also being accelerated.

At the same time, values of these lands and resources have greatly increased. In some national forests, a single tree now may be worth \$500 or more. It is essential that national forest land lines be clearly marked on the ground to prevent trespass on them, to prevent users of them from trespassing on private tracts, and to assure full and knowledgeable protection and administration by field personnel in the Government's interest. In order to properly protect and administer a tract of public land it must be identified and plainly marked.

There are 153,000 miles of boundary between national forest and other lands that require survey and marking. In the next ten years about 43,000 miles of these will be surveyed and marked in connection with specific projects. To complete satisfactory on-the-ground identification of the other 110,000 miles in ten years

will require that 11,000 miles be marked per year on an average. Additionally, lines now marked must be maintained (every 10 years in eastern United States and every 20 years in western United States) an average of about 5,000 miles per year now and 15,000 miles per year ultimately. Cost to accomplish this essential job in ten years is estimated at not less than \$710,000 per year. In addition, a minimum of \$150,000 per year will be required for resurveys of townships and establishment of other base control.

The proposed increase of \$416,000 will permit commencement of the above essential survey job on a planwise basis, including basic surveys necessary for economical property line establishment.

- (d) An increase of \$260,000 to more efficiently administer national forest properties by mutually desirable ownership consolidation through boundary adjustments and land exchanges. A detailed study of national forest boundaries indicates that about 11 million acres properly may be excluded from the present national forest and purchase unit boundaries, provided that the 1,200,000 acres of national forest lands in these areas are disposed of first. Existing authority for disposal of these national forest lands is confined to exchange laws applicable to national forest land. A comprehensive program has been approved for exchange of these national forest lands. This mutually desirable land exchange action will permit consolidation of privately owned land in the excluded area to provide more economic farm units and needed commercial, residential, and urban developments. It will also facilitate consolidation of national forest land and result in more economical and efficient protection and management. The land exchange program for Weeks Law national forests has been approved by the National Forest Reservation Commission, as required, and it is anticipated that approval on all other national forests will be obtained before the end of fiscal year 1957.

On the basis of a 5-year exchange program, 240,000 acres will be scheduled for exchange per year. This means that each year on an average 480,000 acres will need to be examined, surveyed, and appraised, and 400-600 cases negotiated, processed, examined as to titles, and like formalities completed. This will cost \$312,000 per year or more. The increase of \$260,000 is for the first year while the program is getting under way.

The foregoing exchange load is in addition to current exchange programs for blocking-in national forest lands, making lands near communities available for private use, building up farms and ranch headquarters, and otherwise adjusting the national forest land pattern for better administration. The additional work involved in the present major boundary adjustments cannot be handled without additional funds.

- (10) An increase of \$311,600 to provide for the establishment of about 35 new ranger districts.

Need for Increase: The Forest Service has prepared ranger district work load analyses based on actual work load volumes of business and unit time factors at 5-year intervals since 1935. These analyses indicate



that ranger district work loads are increasing at the approximate rate of 5% per year and have increased nearly 50% in the past 10 years. There is every reason to believe that about this same rate of increase will continue for some time.

Organization studies clearly show that managerial work loads on ranger districts should be controlled within established limits for maximum resource program production and over-all administrative efficiency. The decentralized organization structure of the Forest Service requires district rangers to be "working" leaders on field projects in addition to preparing and keeping current management plans for the use of the resources on their respective districts. When districts become overlarge in work load the ranger becomes a supervisor only and an unnecessary additional layer of supervision is added to the organization.

Past management practices have given consideration to the basic organization objective mentioned above and as transportation and communications have improved and other factors have permitted, ranger districts have been consolidated when it was justified by the work load. Also, ranger districts have been divided within the limits of available funds in order to keep work loads within bounds. However, division of districts has not kept pace with increasing work loads and there now are about 100 ranger districts with substantial overloads. Lack of funds for district ranger salaries and expense and for ranger district headquarters improvements have prevented this urgently needed district reorganization. Several factors, including communications, transportation, headquarters improvements, etc., indicate that it would not be practicable to divide all of the overloaded districts in one year. However, about thirty-five new districts can be established in fiscal year 1958 with the proposed increase. Adequate national forest management can best be secured by keeping ranger district management in reasonable balance with resource programs.

Plan of Work: The proposed increase will be allocated to field units for the establishment of new ranger districts on the basis of analyzed work load, size and other pertinent physical factors, such as transportation routes and availability of headquarters facilities.

(11) An increase of \$101,400 to do urgently needed rehabilitation work on land utilization projects in the Great Plains.

Need for Increase: The eight projects in this area (eastern Colorado, northeast New Mexico, northwest Texas, southwest Kansas, western Oklahoma) contain 958,934 acres of Government-owned submarginal land. To restore and maintain essential grass cover on these lands and provide for protection and orderly use, the following additional work is necessary:

- 100,000 acres of seeding
- 400 miles of fencing
- 150 water developments
- 50 miscellaneous improvements (cattle guards, etc.)

If the Government is to retain administration of these lands for even a few years, it is essential that they be prevented from adversely affecting or injuring intermingled private land, that they be restored and managed to demonstrate good land conservation, and that they contribute proportionally to the local economy.

Plan of Work: With the increase of \$101,400, plus almost that amount from currently available funds, it is estimated that 10-15% of the above indicated urgently needed rehabilitation work on federally owned "Land Utilization" land in the Great Plains area can be accomplished during fiscal year 1958. This will also greatly encourage and assist owners of intermingled and nearby lands to accomplish similar rehabilitation work on their lands.

(12) An increase of \$508,800 to meet the increased fire hazards and risks resulting from greater use of all forest resources, reduce man-caused fires, and provide for development and use of new equipment and methods, including air support and attack.

Need for Increase: An increase of \$100,000 is needed to double the present equipment development program of investigating, adapting, developing, and testing new machines and accessory materials for accelerated mechanization of fire-fighting forces.

An increase of \$156,800 is needed to employ additional competent people in the field of fire prevention in the problem areas and to provide trained law enforcement officers to aid in prevention of fires and to prepare trespass cases and reports based on professional investigation.

An increase of \$52,000 is needed to extend smokejumper coverage to more of the remote, roadless areas of the West.

An increase of \$200,000 is needed to speed up the transition from the old hand tools and pack stock methods to new proven machines, equipment, and materials which will provide faster, cheaper and more effective control lines with less manpower.

Plan of Work: The present Arcadia, California, Equipment Development center will be enlarged with additional professional personnel and facilities to develop commercially available items of equipment such as tractors, plows, tankers and trucks, develop pilot models of specialized equipment that is not commercially available and field-test all items before they are adopted.

Additional prevention effort will be directed to make thorough and frequent fire prevention contacts in specific problem areas of the South-eastern States, California, and the Central States, which will bring the cost of prevention and cost of fire suppression and damages into a realistic economic balance. It will provide for a selected action program to meet the specific problems with proven media of fire prevention.

Additional professional law enforcement personnel will be trained to aid in fire prevention, as well as contribute to more successful action in reclaiming fire suppression cost and damages from man-caused fires.



Increases to provide for equipment will be used to underwrite initial contractual guarantees for helicopters, tractors, airplanes, purchase of accessory equipment for these machines, and purchase of mechanical trenchers, power hand tools and expendible low-cost camp equipment already developed. The availability through commercial channels of improved performance model helicopters offers great opportunity to reduce excessive fire damage and cost through its versatility in timbered mountainous country and adaptability to many tasks in fire control work.

(13) An increase of \$3,279,900 to provide housing for employees in remote areas, for other miscellaneous structures, and to increase the level of maintaining structural improvements.

Need for Increase: The increase is made up of two parts as follows:

(a) An increase of \$3,000,000 for construction of improvements.

Forest Service programs have been substantially expanded in recent years to meet current demands for increased service and resource products. Timber management and recreation have received the greater increases, but significant increases have been received for reforestation, revegetation, land use, range resource management, soil and water management, and other items.

The direct result of this expanded activity is to increase the physical structural plant requirements and the need for modernization of facilities constructed previously.

Over 90 percent of the national forest structural plant was built during the Civilian Conservation Corps program of the 1930's. At the termination of this program, about 15 years ago, this physical plant was reasonably adequate for the needs at that time. Until 1957 when a \$1,000,000 increase was received for housing there had been no increases for construction. Consequently, the facilitating improvement construction needed for effective program operations is seriously out of balance.

The \$3,000,000 increase requested, plus currently available funds would provide a total of about \$5,000,000 for new construction to meet the most urgent needs in 1958. While the 1957 increase of \$1,000,000 for housing was very helpful the situation is still extremely critical. Adequate housing is a must for recruitment and retention of competent personnel. A large part of the work essential to national forest programs is in forested or rural areas where suitable rental buildings are non-existent. A measure of the increase in the timber sales job--and personnel needs to handle it--is the approximately 500 percent rise in volume cut. Structural improvements for fire protection are inadequate to meet present-day risks and hazards with the high values being protected. Many fire lookout towers have deteriorated to the point where a decision must be made as to whether to gamble on the risk of fire occurrence or the safety of the employee who must man those locations.

Since timber sales and some other national forest programs are revenue-producing, they should be supported with the needed facilitating construction program.

Most of the work needed to successfully carry out the expanded Forest Service programs is of necessity administered from central ranger station headquarters. Administrative structural facilities, such as office buildings, storage buildings, bunk houses for seasonal workers, etc., are in many locations either lacking, inadequate, or have reached a stage of obsolescence and should be replaced.

Unless adequate funds for improvement construction are provided to keep a balance with operating programs there cannot be effective progress.

(b) An increase of \$279,900 to step-up urgently needed maintenance of improvements.

It is essential to keep in reasonable repair the physical plant on which all national forest activities depend. This plant involves some 1,800 fire lookouts, 695 offices, 4,900 cabins, barracks, and dwellings, 3,900 water and sanitary systems, 6,700 utility buildings for storage of supplies and equipment, 33,500 miles of telephone lines, 8,000 radios, 4,300 miles of fence, other than range, and other miscellaneous structural improvements. These improvements are dispersed over an area of 181,000,000 acres. They are an integral and essential part of the management and protection of this large land area, involving forest fire protection, timber harvesting, watershed protection, and other land use activities on the national forests. Inadequate funds in the past has resulted in a backlog of deferred maintenance.

Plan of Work: The proposed increase of \$3,000,000 for construction will be allotted to field units on the basis of need with housing for personnel as the first priority. It is estimated that approximately 135 dwellings will be built. Bureau of the Budget regulations and standards for Federal housing will be followed for all projects. Quarters rentals of about \$80,000 annually will be deducted from the salaries of employees occupying these houses. Approximately \$300,000 of the increase will be used for construction of other improvements needed for the protection and management of the national forests. This would include offices, work centers, lookouts, barracks, dormitories, etc.

Maintenance funds will be distributed to field centers based on the numbers of improvements by classes currently justified by program utilization and on analyzed unit cost of maintenance. Priorities of maintenance are established at forest, and sometimes at regional levels so that improvements vital to protection of the resources will receive the highest degree of maintenance.



The program increase of \$720,000 for the subappropriation "Forest Research" consists of:

(14) An increase of \$128,800 for research in forest, range, and watershed management as follows:

Need for Increase:

(a) To develop methods for assuring natural regeneration and improved watershed conditions in the harvesting of mixed forest types of the Pacific Coast and Alaska.

Timber sale activities are rapidly expanding on national forests and other lands in the Pacific Coast States and Alaska. Cuttings are now extending into the mixed forest types such as silver fir-hemlock, grand fir-larch, and red fir, which so far have not been studied. To assure that areas logged over are promptly regenerated, additional research is needed on problems of seedbed preparation, brush control, and stimulation of seed production in the cutover areas.

Since much of the expanded cutting is on steep slopes, entailing erosion hazards, or at high elevations where snowfall is heavy, timber cutting needs to be harmonized with watershed objectives. This will require research on patterns of cutting to increase the snow pack and prevent rapid runoff.

(b) To develop successful techniques for reclaiming for forest production the extensive brush fields of the Pacific Coast States.

The recent Timber Resource Review shows that about 6.5 million acres of commercial forest land in the Pacific Coast States are unproductive. Most of this vast area is covered with brush of a number of species which inhibits or prevents the establishment of tree reproduction, and which may not form desirable game habitats. With the need to increase forest and game forage production these areas should not be left idle. Past efforts to convert brush fields to forests by natural seeding or by planting have been largely unsuccessful. Ways must be found to convert these brushlands to productive forests and game habitats without endangering watersheds.

Plan of Work: The work will be carried out on experimental forests under the direction of the Regional Forest Experiment Stations in California, the Pacific Northwest and the Forest Research Center in Alaska, in cooperation with State agencies and private industry. The increases will be applied as follows:

	<u>California</u>	<u>Pacific Northwest</u>	<u>Alaska</u>
(a) Natural regeneration problem:			
Forest Management phases .....	\$12,900	\$12,900	\$26,000
Watershed Management phases.....	12,900	12,900	

	<u>California</u>	<u>Pacific Northwest</u>	<u>Alaska</u>
(b) Brush conversion and seeding and planting problems:			
Forest Management phases .....	\$25,400	\$12,900	--
Range Management - Big game forage phases .....	--	12,900	--
Totals .....	<u>51,200</u>	<u>51,600</u>	<u>26,000</u>

(15) An increase of \$51,400 to develop methods of preventing severe lightning fires and to increase the efficiency of firefighting through use of the helicopter.

Need for Increase: Last year, 1955, Federal and State agencies spent over \$70 million to fight 145,000 forest fires. These fires burned over 8 million acres of forest land causing severe loss of timber growth and damage to watersheds. The number of fires and heavy losses would have been much greater except for the many improvements in protection against fire, including reduction of fuel hazards, fire danger meters, fire weather forecasting, improved use of water and chemicals in controlling fire, use of airplane and helicopter in firefighting and numerous other practices developed to increase the efficiency of protection against fire. Despite these numerous advancements, forest fire research has as yet scarcely scratched the surface of the fire prevention and firefighting problems. An expanded research program on many fronts is fully justified but the two problems listed below are outstanding for their seriousness, for the cooperative research effort which will be stimulated by an increase in Forest Service research, and for the favorable chances of early success in the research.

(a) To develop improved methods of preventing severe lightning fires.

Lightning is responsible for starting about 7,500 fires a year in the western forests; severe lightning storms may cause hundreds of fires in a single day. Typically, little rain accompanies such storms and it may be entirely lacking in areas of intense lightning activity. Because of the mountainous terrain, and difficulty of reaching such fires, and their frequent occurrence during periods of drought, firefighting costs are often heavy and losses severe. A major problem is the lack of adequate warning of which storms have a high fire-setting potential, the direction they will take, and their likelihood to spatter lightning strikes without accompanying rain. A corollary problem is the lack of definite information on how and where individual thunderstorms will affect burning conditions in the vicinity. This is a key factor determining how each lightning fire will burn, and correspondingly, the speed and strength of suppression action which will be needed to control the fire. Exploratory studies by the Forest Service in cooperation with the Weather Bureau and a private research foundation



have indicated a good possibility that methods can be developed to detect the build-up of fire-setting storms, to predict their direction and rate of travel as well as the possibility that lightning storms can be modified through cloud seeding techniques to lessen their fire-setting potential. More intensive research is needed to follow up and fully exploit the favorable leads already gained.

(b) To increase the efficiency of firefighting through use of the helicopter.

Helicopters have been effectively used to scout forest fires and to transport firefighters to hard-to-get-to positions on a fire line. Preliminary tests have indicated their possible use in rapid laying of water hose, in back-firing in strategic locations, in applying water or chemicals to fires, and in other ways where mobility of ground forces and equipment is slow and difficult due to rugged topography or heavy brush or forest cover. Research is needed to convert these ideas into practical fire fighting methods. This requires evaluation of helicopter capabilities for different fire and tactical situations; thorough analysis of fire fighting principles and practices that can be applied efficiently by helicopter; design and development of accessory equipment; development of safe and effective tactical maneuvers for each application; establishment of standard operating procedures that effectively integrate helicopter use with ground force suppression action; and evaluation of the performance of each helicopter activity in terms of efficiency in both striking power and mobility of fire fighting forces.

Plan of Work: The research to develop improved methods of preventing serious lightning fires will be carried out in the Rocky Mountain area by the Intermountain Forest and Range Experiment Station from its fire research laboratory at Missoula, Montana. The work will be done in cooperation with the Weather Bureau and the Munitalp Foundation, and the Advisory Committee on Weather Control. The research on helicopters will be carried out in California Forest and Range Experiment Station in cooperation with the Army Corps of Engineers and State Division of Forestry. Half of the requested funds will go to each of the two projects.

(16) An increase of \$51,100 to expand research on the cause and control of forest diseases that kill important timber species.

Need for Increase:

(a) Root rots.

Root rots kill many trees and weaken others so that they are susceptible to attack by other forest pests or to windthrow. Annual losses are estimated at 600 million board feet of timber. Nearly all of our important coniferous trees are attacked: Douglas-fir, hemlock, Port Orford cedar, and ponderosa pine in the West; shortleaf and loblolly pines in the South; and red and white pines and red spruce in the North and Northeast. Root rots are caused by several different fungi that spread in different



ways and require different control methods. They are more serious in young stands than in old and constitute a growing problem in planted stands of trees. The root rot problem is particularly acute in the Pacific Northwest and the Southeastern regions.

(b) Unknown disease of oaks.

A new and unknown disease has appeared in stands of red, black, and scarlet oaks in the Allegheny Plateau region of Pennsylvania and New York. Losses are already heavy on about 8,000 square miles of forest land and the area and intensity of damage is still increasing. Preliminary studies have been started by Federal pathologists, assisted by State and University personnel, but the situation is so serious that it demands more intensive research immediately in order to determine the cause and to indicate preventive or control measures.

(c) Dwarfmistletoe.

Dwarfmistletoes are the second most important cause of mortality in coniferous forest stands in the United States. Losses from them are estimated to be 180 million cubic feet of timber annually. They are abundant throughout the West on Douglas-fir, ponderosa, Jeffrey, and lodgepole pines, larch, hemlock, and red and white firs. They are also serious in black spruce stands in the Lake States. Over 50 percent of the commercial stands of ponderosa pine in the Rocky Mountain and Southwestern regions are now infected and the area is increasing. Sanitation measures such as removing or destroying the infected trees have been effective but are expensive to carry out and destructive to forest productivity. Limited research has been started to secure control through the application of selective herbicides. This method offers considerable promise but will require extensive research testing before it can be recommended as a practical solution to the problem.

Plan of Work: One-half of the increase would be used to expand root rot research in the Pacific Northwestern and the Southeastern Forest Experiment Stations. Research to determine the cause and control of the new disease of oaks would be intensified at the Northeastern Forest Experiment Station. About one-fourth of the increase would be used to improve dwarfmistletoe control measures in the Southwest, with the work to be done at the Albuquerque, New Mexico, Research Center of the Rocky Mountain Forest Experiment Station. All of the expansion would be carried out in cooperation with States, Universities, and other non-Federal agencies.

(17) An increase of \$178,900 for research in forest products utilization research.

Need for Increase:

(a) To develop chemical utilization outlets for poor quality and little-used species and for logging and mill waste.

A major problem on farm woodlots and other timber lands is the increasing surplus of poor-quality hardwoods and little-used timber species for which additional utilization outlets are needed and whose removal would

greatly facilitate forest management activities and increase productivity of the land. One of the most promising methods is through chemical conversion of wood to multiple products such as levulinic acid, furfural, acetic acid, and formic acid. Past efforts in chemical utilization of wood have been largely directed at single-product processes. Such a multiple process has been conceived and tested by batch laboratory methods. It involves the use of higher pressures than have previously been used. Economic success will depend on the development of a continuous process such as has been conceived at the Forest Products Laboratory. There is a need for working out factors for design of a commercial plant in a small-scale laboratory pilot plant.

(b) To improve materials and design of packaging for agricultural products.

There has been an increasing tendency to use fiber board containers for a wide variety of agricultural products. However, a major problem has developed when the package is subjected to refrigeration, particularly at high humidity. Presently available fiberboards need to be evaluated and their limitations identified, followed by research to develop the basic data on material characteristics of design to overcome its difficulties and to generally improve container board for packaging and shipping containers. The Forest Products Laboratory has outstanding facilities for this type of research.

(c) To develop improved criteria for log and tree grades.

The production and marketing of timber is greatly handicapped by the lack of suitable tree or log grades that reflect quality and value of the standing timber or sawlogs.

The current pressing need is for an improved basis on which log and tree grades for softwoods can be developed. Further studies are needed at the Forest Products Laboratory to develop the basic criteria from strength and other quality determinations correlated with factors that may be recognized in the tree or log such as size and type of knots, decay, mechanical injury, growth characteristics, etc. Field studies are also needed to adapt and test log and tree grade specifications to regional forest types and requirements of primary processing.

(d) To improve utilization practices in the various forest regions.

There is a growing need for on-the-ground studies to complement research at the Forest Products Laboratory on problems encountered especially in developing improved processes to utilize little-used species and low-value trees. The field studies include improved logging and related harvesting practices, variations in wood qualities among species, improved methods of lumber drying adapted to needs of the various industries, special problems of processing new and previously untried species. Currently, the need is especially acute for field utilization studies in the Intermountain and Northwest regions.



Plan of Work: The research will be carried out at the Forest Products Laboratory at Madison, Wisconsin, and at the regional forest experiment stations in the Intermountain and Pacific Northwest. Of the amount requested for forest products utilization, \$153,400 is for the Forest Products Laboratory (\$112,200 for chemical utilization, \$26,000 for agricultural packaging, \$15,200 for log and tree grade criteria), and \$25,500 is for field studies (\$12,750 at the Intermountain Forest Experiment Station, and \$12,750 at the Pacific Northwest Station).

(18) An increase of \$309,800 to accelerate the forest survey to provide more up-to-date and adequate information on timber resources.

Need for Increase: The increase is needed to accelerate the forest survey to provide forest industries, timber owners, and local, State and Federal agencies with more up-to-date and adequate statistical information on timber supplies and requirements. Experience demonstrates that such information can be obtained only through a systematic and comprehensive forest survey that will provide statistics on available forest areas and condition of forest lands; the volume, location, and quality of standing timber, trends in timber growth, trends in timber cut and loss, including volumes lost from fire, insects, disease and through logging and milling waste; and prospective supplies and demands for timber products in the rapidly expanding economy of this Nation.

Forest Survey information is used by timber industries such as pulp mills, sawmills, and veneer and plywood plants to guide them in new plant locations and in deciding on plant expansions where continuous supplies of wood raw material appear adequate. State and local public agencies are depending to an increasing extent on the forest survey for fire protection plans, for programs of forest tree nursery expansion, for developing guidelines in appraising forest land on a more equitable basis for tax purposes, and for various State and local legislative purposes that pertain to forest land. The Federal Government uses the data in basic considerations of national programs and policies concerning the Nation's forest resources. The information is used in broad planning for management and use of national forests and other Federal holdings.

Acceleration of the forest survey is needed most in the Rocky Mountains and Alaska where large acreages of forest land have yet to be inventoried for the first time, and in the Pacific Northwest and the South where re-surveys are seriously lagging behind what is needed to keep up with rapidly changing conditions of timber supply and demand due to forest industrial use and forestry programs. Additional research is also needed to make more thorough studies of future requirements for forest products due to expanding population and increased national income.

A small study under way on techniques of forest surveys, including improved use of aerial photos, has paid good dividends in improved efficiency and lowered costs of forest surveys; it needs to be expanded for greater gains in efficiency.



Plan of Work: The increase requested will be used to:

- (a) Accelerate a first inventory of the Rocky Mountain Region to provide a better basis for the expansion of forest industries in this area and to indicate forest management and related program needs.
- (b) Initiate a general inventory and appraisal of the interior forests of Alaska to determine the extent, volume and quality of timber on an estimated 40 million acres of productive land which supports timber stands of unknown but great potential importance.
- (c) Place resurveys on a satisfactory rotation schedule involving reasonable intervals of from 8 to 12 years between surveys of specific parts of a region, particularly in the South and Pacific Northwest where nearly 20 years have now elapsed since the first timber resource appraisals in the 1930's and where major changes have occurred in forest conditions, forest industrial expansion, and timber utilization practices.
- (d) Cooperate with State and industrial conservation groups in making intensified local surveys to appraise local problems, forest program needs, and employment and industrial opportunities.
- (e) Appraise more adequately the amount and nature of potential timber requirements by the greatly increased future populations of the United States.
- (f) Develop new and improved techniques for timber surveys through interpretation of aerial photographs and through improved sampling and other procedures.

The program increase of \$1,013,600 for the subappropriation "State and Private Forestry Cooperation" consists of:

- (19) An increase of \$300,900 for cooperation with States in procurement, production, and distribution of forest tree seedlings.

Need for Increase: In most States the demand for forest tree seedlings continues to be greater than the supply. In the South especially the shortage of seedlings has delayed important reforestation projects of both small and large private ownerships. With the increased interest in tree planting occasioned by the passage of the Agricultural Act of 1956, demands for seedlings for planting on all classes of land are expected to increase materially. Trees produced for the Soil Bank Program cannot be used for any other purpose, and the only means of helping to meet this new demand for seedlings on non-crop land will be through funds available from this appropriation plus increased State funds.

During fiscal year 1956 the State nurseries produced 560 million seedlings under this program, or 60 per cent of the total produced in the United States. During the same period, over 887,000 acres

were reforested in the United States and nearly 28,000 acres of wind-barriers were also planted. Although this was a sizable job, it is relatively small when compared to the area in need of planting -- over 50 million acres.

Plan of Work: It is anticipated that the proposed increase would be more than matched by present State funds, resulting in an estimated production of 610 million trees in 1958, and would stimulate greater future State appropriations for this cooperative planting program.

(20) An increase of \$501,900 for additional cooperation in providing technical services to small woodland owners.

Need for Increase: There are more than four million small woodland owners who own some 265 million acres, or three-fourths of all of the privately owned commercial forest land in the United States. Three and one-third million of these small owners are farmers. These small woodlands are in poorer condition than the large ownerships or the lands in public ownership. Consequently, the small ownerships are the "hard core" of the problem of achieving good forest management throughout the Nation.

At present there are 285 cooperatively employed farm foresters working with these small woodland owners. During fiscal year 1956 these men assisted over 38,000 owners owning more than three million acres of land. While this was a sizable job, it falls far short of solving the problem of the small woodland owners. Over 6,400 small sawmill operators were helped. Six hundred eighty nine owners were referred to private forest consultants.

Plan of Work: The proposed increase, when matched by the States, would provide an additional 130 farm foresters, bringing the total to over 400. This would permit strengthening the program in all cooperating States, with special emphasis in those areas where a concentrated effort is being made to improve employment possibilities for under-employed farmers.

(21) An increase of \$210,800 for general forestry assistance to agencies and individuals with specific forest management and forest utilization problems.

Need for Increase: Large areas of rural underemployment are found in 27 States. Many of the areas are located in "back-woods" communities where employment opportunities are meager but where there are valuable undeveloped forest resources. Most of these forests are privately owned. Because of many years of misuse, these forests contain large quantities of relatively low-value but usable material. The big problem, therefore, is to expand existing markets and to develop new ones using local farm labor and the surplus raw material abundant in the forest. Pulp, paper, fiberboard, charcoal, chemical products, lumber, furniture, crossties, poles, and many other forest products offer marketing and employment possibilities.

As the principal forestry agency of the Government, the Forest Service receives thousands of requests for help in the solution of specific



forest management problems. Many of these which come from consulting foresters, State Foresters, forestry colleges, large industrial forest owners, etc., as well as from other Federal agencies, such as the Defense Department and Atomic Energy Commission, often deal with matters of most technical, specific, or advanced nature. This program of General Forestry Assistance is intended to help in the solution of unusual forest management problems, and in the development of advanced techniques of forestry. For example, in the Southern Region, schools dealing with hardwood management problems were held in North Carolina, Louisiana, South Carolina, and Texas for consulting and industry foresters; and assistance was given the West Virginia Pulp and Paper Company in the application of the new point-sampling inventory techniques.

Plan of Work: The proposed increase would be used to provide additional forest industry specialists, who will concentrate upon making analyses of resource and industrial potentialities and upon the promotion of new industries and the expansion of existing markets. Close correlation would be maintained with State Foresters who would be encouraged to cooperate to the fullest extent.

(22) An increase of \$2,163,800 is required to meet retirement costs under Public Law 854, applicable to the base for 1958.

The Civil Service Retirement and Disability Fund is used to pay annuities to retired employees or their survivors, to make refunds to former employees who have left the service, and to pay claims for employees who have died before their annuities are paid in full. These costs are shared by the employees, through payroll deductions, and by the Government. For fiscal year 1957 and prior years the Government's share of the cost was financed by a lump-sum annual appropriation covering the Government's share of net cash disbursements from the fund. A large part of the Government's share of total accrued liabilities remained unfunded each year. In order to place the fund more nearly on a pay-as-you-go basis, and to associate the Government's share of the cost more directly with the various programs, Public Law 854 (Sec. 4(a)) increased employee contributions from 6% to 6½%, and provides that from and after the first pay period which begins after June 30, 1957 each agency shall deposit in the civil service retirement fund an amount equal to the retirement contributions deducted from employees' salaries.

The Explanatory Notes reflect under each appropriation affected the total estimated cost of the retirement contributions to be made to the retirement fund during fiscal year 1958. The additional costs will be absorbed to the maximum practicable extent. Additional appropriations are being requested only to cover that part of the retirement contribution cost that cannot be absorbed without reducing program operations below the level required to effectively carry them out. Additional funds requested for retirement costs applicable to the base for 1958 are reflected in a separate column in the Project Statement for each appropriation. Retirement costs applicable to program increases requested for 1958 are included in each item of increase, and the Project Statement also indicates separately the retirement costs included in such increases.



The estimated costs of contributions to the civil service retirement fund for fiscal year 1958 are based on 25 pay periods. Contributions will not be made for the first of the 26 pay periods occurring in fiscal year 1958, since this period will begin on June 30, 1957. The costs were computed on the basis of 6½% of the estimated net basic salary costs for the last 25 pay periods in 1958 of employees subject to the Civil Service Retirement Act of 1930, as amended. Net basic salary costs were computed on the basis of basic salary rates established by law for budgeted positions, adjusted for estimated lapses due to delay in filling vacant positions, leave without pay, reallocation of positions, and other factors where appropriate.

#### EXPLANATION OF NEW LANGUAGE

The estimates propose a new appropriation item "Forest Protection and Utilization, Forest Service" which replaces language previously carried under "Salaries and expenses, Forest Service," "State and private forestry cooperation, Forest Service," and "Acquisition of lands for national forests, Weeks Act, Forest Service."

The language for the new item is quoted below, with marginal reference keyed to the explanation of new provisions:

For expenses necessary for forest protection and utilization, as follows:

Forest land management: For necessary expenses of the Forest Service, not otherwise provided for, including the administration, improvement, development, and management of lands under Forest Service administration, fighting and preventing forest fires on or threatening such lands and for liquidation of obligations incurred in the preceding fiscal year for such purposes, control of white pine blister rust and other forest diseases and insects on Federal and non-Federal lands; \$72,730,000, of which \$5,250,000 for fighting and preventing forest fires and \$1,760,000 for insect and disease control shall be apportioned for use, pursuant to section 3679 of the Revised Statutes, as amended, to the extent necessary under the then existing conditions: Provided, That not more than

1 \$100,000 may be used for acquisition of land under the Act of March 1, 1911, as amended (16 U.S.C. 513-519): Provided further,

2 That funds appropriated for "Cooperative range improvements", pursuant to section 12 of the Act of April 24, 1950 (16 U.S.C. 580h), may be advanced to this appropriation.

Forest research: For forest research at forest and range experiment stations, the Forest Products Laboratory, or elsewhere, as authorized by law; \$11,325,000.

State and private forestry cooperation: For cooperation with States in forest-fire prevention and suppression, in forest tree planting on non-Federal public and private lands, and in forest management and processing, and for advising timberland owners, associations, wood-using industries, and others in the application of forest management principles and processing of forest products, as authorized by law; \$13,245,000.

Forest Service appropriation language has gradually been expanded during the past 50 years to cover added activities related mostly to new laws enacted during this period. It is proposed to simplify the appropriation language in 1958 by reducing the number of appropriations and sub-appropriation items, and simplifying and reducing the descriptive wording in the language.

The new language is not intended to change the basic concept or the authority for performing any activities now carried on by the Forest Service. It does not affect in any way the nature and scope of the work heretofore conducted under the various appropriations which are recommended for deletion. In reducing the words, the intent is merely to eliminate detailed description of individual elements of work now being conducted. Thus the phrase in the new appropriation language "For necessary expenses of the Forest Service, not otherwise provided for, including the administration, improvement, development, and management of lands ..." covers in broad terms the detailed descriptions in the previous language of such work as, for example:

"to ... report on forestry, national forest, forest fires, forest insects and diseases, and lumbering"  
"to advise the owners of woodlands as to proper care of the same;"  
"to ... improve the national forest, including tree planting and other measures to prevent erosion ... and to conserve water;"  
"to transport and care for fish and game supplied to stock the national forests or the waters therein;"  
"development and application of fish and game management plans;"  
"to collate, digest, report, and illustrate the results of experiments and investigations ...;"

Similarly, all functions authorized by law are not covered in specific detail by equivalent appropriation language. To do so, would create unduly long language and, in effect, duplicate existing laws. For example, Sec. 213 of the Act of September 21, 1944 (16 U.S.C. 526) is quoted as follows:

"Sec. 213. There are hereby authorized to be appropriated for expenditure by the Forest Service such sums as may be necessary for the investigation and establishment of water rights, including the purchase thereof or of lands or interests in lands or rights-of-way for use and protection of water rights necessary or beneficial in connection with the administration and public use of the national forests."

On the basis of the above law, identical duplicating language has been omitted from the proposed new appropriation language.

The more detailed description of work being performed is not considered essential or desirable in the appropriation language because this is covered in the Budget and in the justifications prepared for the Appropriations Committees.

The first change provides a limitation for the acquisition of land under the "Weeks Act" which previously has been a separate appropriation "Acquisition of Lands for National Forests, Weeks Act." This change does not

affect in any manner the nature or scope of the land acquisition activities under the Weeks Act of March 1, 1911, as amended. In addition to lands acquired under that Act, it is proposed to continue to purchase such lands as may be necessary, as has been the case heretofore, for the effective operation of the Forest Service as authorized by law, particularly the Act of April 24, 1950 (16 U.S.C. 555, 580i) and the Act of September 21, 1944 (16 U.S.C. 526). The limitation contained in previous appropriations for purchase of land in Sanders County, Montana, pursuant to the Act of April 24, 1950, has been deleted for simplification, but the language for "General Provisions" retains the provision that such land may not be acquired without approval of the local government concerned.

The second change in language proposes a new proviso in order to provide for the merger of the funds appropriated under the receipt appropriation "Cooperative Range Improvements" with the subappropriation "Forest Land Management." Under this proviso funds will continue to be appropriated from national forest receipts as authorized by section 12 of the Act of April 24, 1950 (16 U.S.C. 580h). However, after funds are appropriated it is proposed to advance the entire amount to the "Forest Land Management" subappropriation and merge it with funds available under that appropriation for similar purposes. This will result in reporting all funds for the construction and maintenance of range improvements including such special facilities as stock driveways, drift fences, etc., in one place. A separate project item is provided for this work in the "Explanatory Notes" which covers all of the funds available for this general purpose. Under this procedure the general authority for the protection and use of the national forests will govern the distribution and expenditure of these funds. The total of the merged funds for this purpose would be distributed to individual national forests on the basis of relative needs as is the case with funds appropriated under the Forest Land Management subappropriation.

The proposed method will greatly simplify the work of the Forest Service by (a) distributing and accounting for funds available for the same general purpose in one amount rather than as two separate appropriations, and (b) by eliminating the need for separate limitations controls by individual national forests.

Other changes related to the major revision of appropriation language is explained under the "General Provisions" section of these Notes.



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## STATUS OF PROGRAM

### FOREST LAND MANAGEMENT

#### National Forest Protection and Management

Current Activities: The purpose of this program is to manage, protect, and develop the national forests and insure that timber, water, range, recreation, wildlife, and other resources are utilized in a manner so as to best serve the Nation.

National forests are managed under the multiple use principle with practically all areas used for, or serving, more than one purpose or objective. For example, 50 percent of the area within the national forests of the continental United States serves five different purposes: (1) timber production, (2) watershed protection, (3) forage production, (4) wildlife production, and (5) recreation. An additional 28 percent serves four purposes in varying combinations. Of the remainder, 21 percent of the total serves three purposes with only 1 percent of the total reserved for one purpose exclusively, mainly campgrounds and special use areas such as summer home sites, pastures, corrals, etc.

The varied interests which inevitably conflict and which must be reconciled, the vast areas covered, and the unusual complexities, clearly require careful planning, and skillful management of the national forest properties.

The protection of national forests from fire and trespass is made difficult by the large area to be protected, the general inaccessibility, the many thousands of miles of exterior boundary, and the impossibility of taking preventive action with such a problem as lightning-caused fires.

National forest boundaries encompass an aggregate area of 229,000,000 acres in 40 States, Alaska, and Puerto Rico, of which some 181 million acres are under Forest Service administration. Many tracts of privately owned lands are interspersed within the Federal holdings.

The economic importance of the national forests will be realized when it is considered that:

- a. The national forests produced a cash income in the fiscal year 1956 of about \$115,000,000. Approximately 65 percent of this amount is credited to the general fund in the Federal Treasury (miscellaneous receipts). The remainder is distributed in accordance with special acts of Congress, including 25 percent to the States and counties in which lands are located. In addition to cash receipts, the non-monetary values of water, recreation, and wildlife on the national forests are estimated to exceed \$300,000,000 annually. Water values accounted for the major portion of this amount, based upon a conservative valuation per acre-foot of water which flowed from the national forests, that was used for irrigation, power, municipal water supplies, and industrial use.

- b. The area within national forest boundaries is equivalent to some 10 percent of the area of the continental United States.
- c. The national forests supplied 6.9 billion board feet in fiscal year 1956 to the nation's forest products industries. This is equal to 17.5 percent of the approximate 39.5 billion board feet of national lumber production and 11.3 percent of total industrial wood consumption (for lumber, pulp, plywood, and miscellaneous products) of around 61.1 billion board feet. Dependence of the forest products industries on national forest timber continues to increase as the result of depletion of good quality timber on private lands.
- d. About 8,000,000 head of domestic livestock are grazed on national forest lands.
- e. The national forests provide protection to municipal water supplies for nearly all western cities and towns and many in the East, to irrigation water used on about 20,000,000 acres of western lands, and to many streams with water power developments. They provide flood protection to thousands of acres of rich valley lands and help to prevent more rapid siltation of reservoirs and stream channels.
- f. They provide a habitat for a large part of the big game animal population, for birds, and for millions of small game animals and furbearers.
- g. They provide opportunities for healthful outdoor recreation, with a minimum of restrictions, for the millions of people who yearly visit the national forests.
- h. Nearly 4,000,000 people who live in and near the national forests are supported in whole or in part through the economic development arising through management and utilization of the forests and their resources.

In addition, about 7,000,000 acres of land utilization projects in 30 States are managed under this appropriation item. Revegetation and other development work has been done on submarginal land projects in cooperation with local and State agencies. Developed lands are made available to local farmers and ranchers at equitable rates under specific use conditions. Of the revenue amounting to about \$2.2 million in fiscal year 1956 relating to these projects, 75 percent goes to the Treasury and 25 percent to the counties in which the lands are located.



Selected Examples of Recent Progress:

Receipts:

Cash receipts in the fiscal year 1956 were \$116,997,158 as compared with \$81,139,290 in fiscal year 1955. The following table summarizes the cash receipts data for the fiscal years 1955 and 1956:

<u>Forest Reserve Fund</u>		Change, 1956 Compared with 1955	
	1955	1956	
Timber .....	\$73,187,364:	\$107,069,764:	+\$33,882,400
Grazing .....	2,953,257:	2,906,282:	-46,975
Land Use, Power, etc. ..	1,524,046:	1,763,087:	+239,041
	:	:	:
Subtotal .....	77,664,667:	111,739,133:	+34,074,466
	:	:	:
<u>Suspense Account,</u>	:	:	:
Alaska 1/ .....	584,962:	568,184:	-16,778
<u>Special Account, O&amp;C</u>	:	:	:
Lands 2/ .....	1,271,251:	2,485,782:	+1,214,531
	:	:	:
Total, National Forest :	:	:	:
Receipts .....	79,520,880:	114,793,099:	+35,272,219
Land Utilization Projects :	1,618,410:	2,204,059:	+585,649
	:	:	:
Grand total cash receipts :	81,139,290:	116,997,158:	+35,857,868
1/ Suspense account established pending settlement of Indian rights on Tongass Forest, Alaska.			
2/ Special account established for certain lands in Oregon.			

In addition to the above receipts it is estimated that the Bureau of Land Management collected about \$1,250,000 of receipts from mineral leases on national forest land.

Net area of lands under Forest Service administration changed from 181,071,658 acres as of June 30, 1955, to 181,081,539 acres on June 30, 1956. This is exclusive of 7,035,326 acres of land administered under Title III of the Bankhead-Jones Farm Tenant Act.

Timber Sales Administration and Management

The cut of national forest timber and receipts therefrom continue to increase substantially as shown in the following table:

<u>Fiscal Year</u>	<u>Volume Cut Million Bd. Ft.</u>	<u>Receipts</u>
1940	1,740	\$3,943,022
1944	3,333	12,872,495
1948	3,759	21,243,122
1952	4,418	63,722,985
1953	5,160	69,252,123
1954	5,365	61,288,631
1955	6,328	75,043,577
1956	6,907	110,123,730
1957 (estimated)	7,750	116,730,000
1958 (estimated)	8,750	148,750,000

Two major timber sales were awarded in Alaska during fiscal year 1956. One to the Georgia-Pacific Alaska Company, included 7.5 billion board feet of timber to be cutover the next fifty years. As a result of this contract a pulp and newsprint mill of at least 500 tons daily capacity is planned for construction in the Juneau area. The other sale of 5.25 billion board feet in the Sitka area was made to the Alaska Lumber and Pulp Company, an Alaska Corporation backed by Japanese capital. This sale is also for 50 years. A 300-ton daily capacity high alpha dissolving pulp mill will be constructed in the vicinity of Sitka, Alaska, to process this timber.

Preliminary award was made for some 3,000,000 cords of dead Engelmann spruce in Colorado, killed in recent years by a major epidemic of spruce beetles. This sale will result in the installation of the first pulp and paper mill in Colorado and major salvage of extensive beetle-killed timber on the White River Plateau.

Sale and salvage of some 100 million board feet of national forest timber killed by the Haystack Fire on the Klamath National Forest in Northern California in early September 1955 is being accomplished. It appears that this prompt action will result in almost complete salvage of the fire-killed timber. There is, however, a major loss of the fine crop of young timber which was completely destroyed by the conflagration.

Reforestation and Timber Stand Improvement Accomplishment--Fiscal Year 1956

	<u>Treated Acreage (By Fund Sources)</u>		
	<u>Forest Land Management (appropriation)</u>	<u>Sale Area Betterment (collections)<sup>1/</sup></u>	<u>Total</u>
Planted and seeded .....	18,174	42,997	61,171
Site preparation work (scarifying, etc.) .....	4,175	19,381	23,556
Plantation release, and weeding and thinning of natural stands .....	18,725	420,569	439,294
Pruning of crop trees .....	180	106,741	106,921
Animal control to protect new trees (fence con- struction, etc.) .....	169,321	155,475	324,796
Rodent control .....	(81,750)	(1,740)	(83,490)
Disease control incidental to reproduction (except blister rust control) .....	14,878	23,370	38,248
Other (girdling culls and worthless trees) .....	57,629	91,839	149,468
<sup>1/</sup> These are funds collected from timber sale operators for betterment of the sale area as authorized under section 3 of the Act of June 9, 1930 (16 U.S.C. 576b).			

Recreation-public use

Recreation-public use amounted to 45.7 million visits in 1955, a 14 per-  
cent increase over 1954 and an increase of 154 percent over 1941. Chart  
I shows the constant growth of recreation use on the national forests.

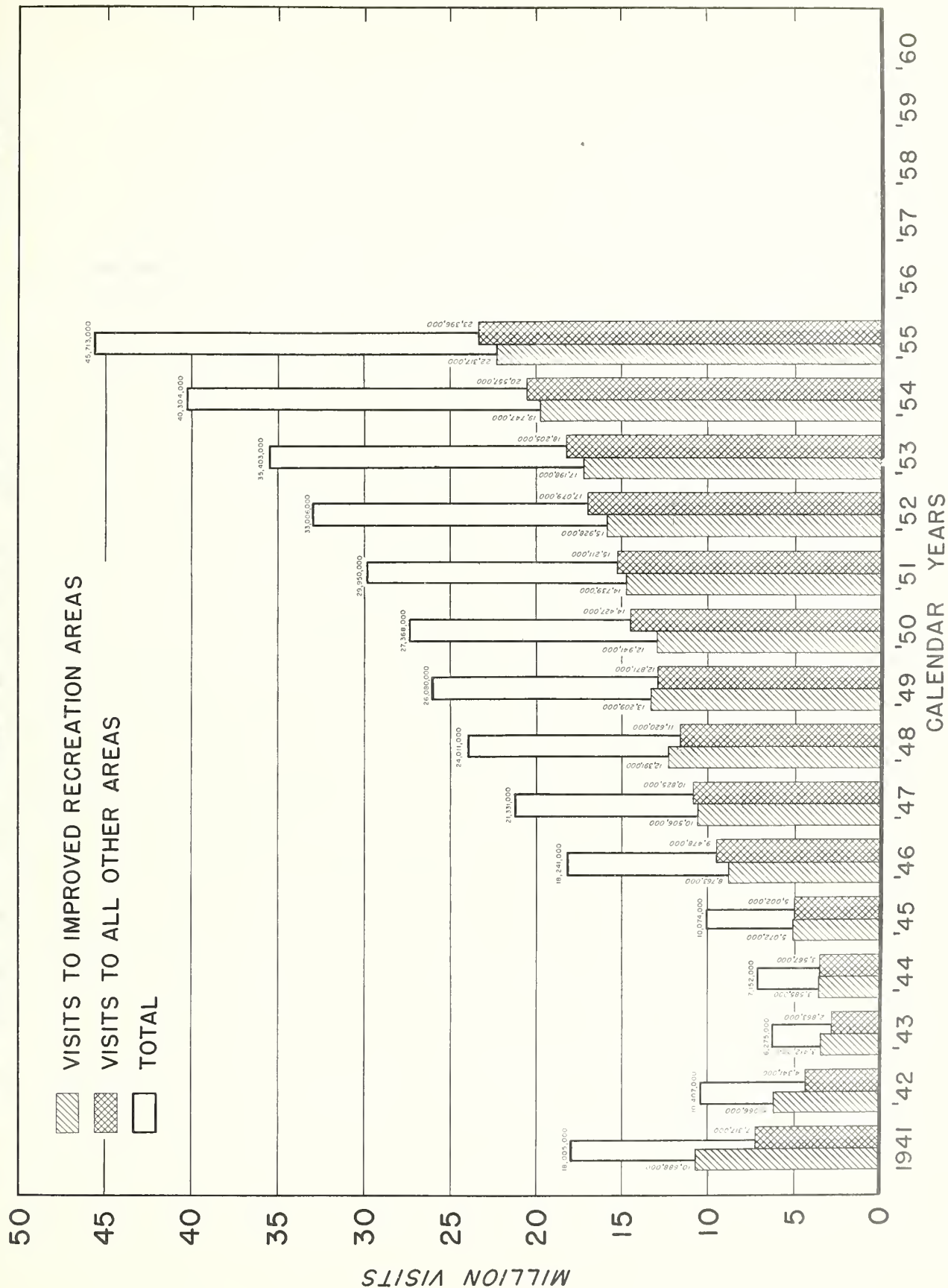
There has been continued effort to correct the unsanitary conditions at  
the 4,700 improved recreation sites. In fiscal year 1956 it was possible  
to clean up 3,148 of these areas to a reasonably satisfactory condition.  
Six thousand three hundred and ninety-four toilets were rehabilitated and  
890 new ones were installed. Some 12,900 fireplaces were maintained and  
2,903 new ones built. One hundred and ninety-four new water facilities--  
wells or pipelines--were constructed and over a thousand maintained.  
More than 21 miles of car control barriers were constructed. About half  
of the new facilities installed were replacement of worn out units.  
The remaining new facilities were installed on areas that were expanded  
from existing sites to alleviate the more critical overcrowded  
conditions.





# RECREATION USE ON THE NATIONAL FORESTS

Chart I







The increase in funds appropriated for the sanitation and care of public campgrounds for fiscal year 1957 will aid the program of rehabilitation. It will be possible to make a start toward the development of a few new areas to provide for the constant, expanding public use.

### Wildlife Habitat Management

The increased use of the national forests by hunters and fishermen and the increasing numbers and harvest of big game animals is shown by the following estimates:

	<u>1950</u>	<u>1955</u>	<u>Percent change</u>
Hunter visits .....	2,285,000	4,060,000	+78
Fisherman visits .....	4,885,000	8,280,000	+70
Big game numbers .....	2,620,000	3,310,000	+26
Big game harvest .....	356,000	479,000	+35

This increased use emphasizes the growing importance of Forest Service work in the protection and development of wildlife habitat.

Including wildlife habitat development in other regular land management activities continued to be the best way for the Forest Service to improve wildlife conditions. Some wildlife habitats have been improved by applying new techniques in silviculture and revegetation, and further studies are planned in this area.

Limited wildlife management plans for coordination of wildlife work with other resource management have been completed for about 50 percent of all forests. Insufficient progress has been made in development of comprehensive management plans; in training of field men in wildlife work; and in administrative study and research to guide this work into the most productive channels.

Habitat conditions for big game and upland game birds are being improved through timber harvesting and resultant increase of low growing vegetation. Wherever practical timber cutting near winter deer concentration areas is done during the winter period to make tops available as forage. The harvest cutting also usually results in increased production of wildlife food and cover from sprouts and other low growth on the cutover areas.

Cooperative wildlife work with the States has continued. New State-wide cooperative agreements were entered into with fish and game management agencies in Oregon, Washington, Kentucky, Illinois, Ohio, and Virginia. The Forest Service has encouraged the States and other organizations to engage in direct cooperative habitat improvement work on the national forests. Under this program a number of new fishing lakes have been constructed and others improved through stabilization of water levels, control of undesirable fish species, control of undesirable vegetation, fertilization, and improvement of spawning conditions. Sixty wildlife watering developments were constructed in arid areas of the Southwest. A number of small wildlife food plots and openings in dense forest types were developed and maintained. Shrubs and trees were planted in some areas to provide better wildlife food and cover.

There is a large backlog of these and other types of high priority habitat improvement work on the national forests. While progress has been made in cooperative programs with the States and other agencies, further effort will be required to realize maximum benefits and to fully coordinate this work with other resource use.

Some progress has been made in reducing overly large big game populations and in building up the herds in underpopulated areas. The overall numbers of big game on the national forests have continued to increase. Further progress needs to be made in surveying condition and trend of big game ranges in order to have sound data on which to base management of the habitat and recommendations for harvest.

### Range Management

In calendar year 1955 permitted grazing use on the National Forests was 1,147,174 cattle and horses, and 2,829,762 sheep and goats for 5,826,829 and 7,950,925 animal months respectively. These livestock are owned by 23,236 grazing permittees.

The average grazing fees for calendar year 1956 varied little from those of 1955, according to data furnished by the Agricultural Marketing Service. The average prices per hundred pounds paid to producers in the Western States for beef cattle and lambs are used in the formulae for calculating current fees. The average cattle fee for calendar year 1955 was 37 cents per animal month; calendar year 1956 is 35 cents. The average sheep fee for calendar year 1955 was 9 cents per head per month; calendar year 1956 is 7.5 cents.

Fiscal year 1956 grazing receipts from national-forest lands were \$2,906,282, compared with receipts of \$2,953,257 in fiscal year 1955.

As mentioned last year emphasis is being placed upon analysis of condition and trend of range allotments. Rate of accomplishment in this important technical job, which includes preparation of management plans and solicitation of permittee cooperation, is being stepped up in fiscal year 1957 by increased funds. Goals for each Region have been set, and it is expected that good progress will be made, particularly on range units in critical condition or where conflicts with other uses are acute.

### Range Revegetation

Approximately 40,000 acres of national-forest land were reseeded and 30,000 acres were treated for removal of competing vegetation in fiscal year 1956. About 3,390,000 acres in a poor to depleted condition remain to be treated.

The Forest Service, Bureau of Land Management, Bureau of Indian Affairs, and Soil Conservation Service have cooperated through the Forest Service Equipment Development Center at Arcadia, California, to test and adopt commercially available equipment for use on wildlands and, if necessary, to develop any special equipment needed for seeding, noxious-plant control, and other range-improvement work. For example, new equipment such as the brushland plow, rangeland drill, pitting and contour machines are now commercially produced from specifications developed at Arcadia. The field



of new commercial equipment is constantly being surveyed for new ideas and for machines suitable to this work. Had it not been for this equipment development work, the accomplishments to date would be considerably less and at a much higher cost.

Progress is continuing in site selection, adapted species, seed bed preparation, planting methods, time of planting, rate of seeding, use of chemicals and machinery to eliminate noxious and low-value competitive plants, and proper management practices.

This type of work is catching on more and more, locality by locality, and is being applied to private lands. It is expected, as time goes on, that there will be a greater participation and cooperation in revegetation to overcome the problems inherent to low producing, low value range lands.

#### Range Improvements

Funds appropriated for this work the past fiscal year were used to the fullest extent possible to maintain the 18 1/2 million dollar investment in fences, driveways, and water developments. In addition, special effort was made to secure permittee cooperation in money, time, and materials. The cooperation thus received has helped the program.

It is believed that range-improvement programs should be a cooperative venture between the Government and the user. This philosophy is being pursued vigorously in an attempt to forestall loss to the Government in increased cost of administration and loss of revenue due to lowered range capacities and loss to the user due to lack of livestock control and overgrazing. Range improvements such as fences, ponds, etc., provide controls in any improved range-management program. Without such measures, full production and sustained yield will not accrue. Permittee cooperation has increased in spite of lowered market prices and the fact that most permits are small; i.e. average cattle permit in 1955 was 68 head.

#### Soil and Water Management

In the fiscal year 1956, a program of watershed rehabilitation was undertaken in nine Forest Service regions. Work was done on 30 areas on 28 national forests to check erosion, stop surface runoff and establish vegetative cover in order to reestablish watershed stability and better hydrologic conditions. In a number of projects watershed rehabilitation work was coordinated with range and timber management or engineering activities to accomplish an integrated program of resource protection and development. The towns of Narrows and Marion, Virginia and Blanding, Utah were sufficiently interested in three of the projects to make contributions of cash or to participate directly in the work. Land treatment work done in upper Meadow Creek watershed on the Fishlake National Forest in Utah will restore hydrologic relationships which will effect an estimated reduction of 80% in flood damages downstream.



### Miscellaneous Land-Use Activities

Over 55,000 special use permits are in effect covering some 100 different uses of national forest lands including summer homes, resorts, pastures, reservoirs, sawmills, television sites, telephone and power lines, etc. The demand for summer home lots still continues to exceed the capacity of the Forest Service to plan and survey such lots. The program initiated two years ago to increase revenues from summer homes is largely completed. Revenues amounted to \$1,071,617 for fiscal year 1956 as compared to \$656,186 for fiscal year 1951. The number of special use permits in force is increasing at the rate of approximately 1,000 per year.

### Mineral Permits and Leases

Mineral permits and leases on acquired lands are issued by the Bureau of Land Management, with the consent of the Forest Service. Mineral leases under the Mineral Leasing Act of 1920 are issued by the Bureau of Land Management, and the Forest Service makes a determination as to whether mineral exploration may be carried out without serious adverse effects on watershed and other surface values, and special conditions are inserted in the lease to protect such values. The determination of whether or not mineral development is in the public interest involves many important decisions by Forest Service field people. As of June 30, 1955, there were in effect 1,326 acquired land leases covering 974,982 acres and 6,185 Mineral Leasing Act of 1920 leases covering 6,198,135 acres.

Receipts from acquired lands mineral permits and leases for fiscal year 1956 amounted to \$604,865. Receipts from mineral leases under the Mineral Leasing Act of 1920 amounted to more than one million dollars, but these are deposited in the Treasury by the Department of the Interior.

There has been a constant increase in acquired land mineral activity, particularly oil and gas leases. There has also been great interest in manganese mining, which necessitates stripping. Land protective and rehabilitation stipulations have been devised which will minimize damage to land and water.

### Mining Claims

Substantial progress has been made in the determination of surface rights of mining claims under the Act of July 23, 1955. Twelve areas comprising 835,736 acres containing an estimated 8,049 mining claims have been sent to the Department of the Interior for publication of notice. Eight of these areas have been advertised and the other four are being processed by the Bureau of Land Management.

An additional 103 areas covering 10,757,022 acres of national forest land containing an estimated 89,229 mining claims have been approved for field examination. This represents 52 national forests. Intensive field work has revealed that the original estimates regarding the number of mining claims were extremely low. Studies are being made to determine the number of acres that will require examination and processing under section 5 of the Act of July 23, 1955. The present 115 areas covering 11,692,758 acres are problem areas where multiple use is essential for the full administration of the national forest lands.

Examination of applications for patent of mining claims on national forest land is also being carried on to determine whether the mining law has been complied with. In cases where the Forest Service believes that mining claimants are not complying with the requirements of the mining law, protests are filed with the Bureau of Land Management and hearings are held. The claim examination and protest work is difficult and requires expert mineral examiners and assistance from the General Counsel's office.

### Mapping

During fiscal year 1956, the Forest Service completed planning sheets to be utilized as basis for planimetric series completion by the regional offices for 23,000 square miles or in equivalent terms, 100 - 15' quadrangles. Topographic manuscripts for engineering and other management needs were completed for 17 - 7 1/2' quadrangles totaling 986 square miles. These quadrangles of standard accuracy were contributory to the national mapping program. Progress was made in solving the cadastral problem through experiments in utilizing aerial photography and first order plotting equipment in cooperation with the Bureau of Land Management and other interested Government agencies.

Contractual awards for aerial photography during fiscal year 1956 included 1,459 square miles primarily for use in connection with the mapping program. In addition, 42,708 square miles of national forest area were awarded to contract for use in the management of timber and other forest resources, portions of which photography will also expedite mapping activities.

### Land Exchange

Congress has passed about 90 laws authorizing the exchange of national forest land and timber for private or State lands intermingled with or adjacent to the national forests. The objectives of these laws are to promote consolidation of the national forests for more effective land and water conservation and more efficient management. During the fiscal year 1956, 85 exchange transactions were approved. Of these transactions, 84 were exchanges of national forest lands for private, State, or county lands within the national forests. 84,945 acres will be granted to the Government and 52,503 acres will be conveyed by the Government. These exchanges will block in national forest lands and will also help consolidate or build up private properties or State conservation units. One transaction is an exchange of national forest timber for 140 acres intermingled with national forest lands.

241,137 acres of national forest land and 242,734 acres of revested O&C railroad grant lands in the national forests of Oregon were exchanged effective June 21, 1956 (Act of June 24, 1954; 68 Stat. 270). These lands previously formed a checkerboard pattern, with the Forest Service administering even numbered sections and the Bureau of Land Management odd numbered sections. This situation caused increased costs, duplication of effort and public confusion. The exchange consolidates national forest and revested lands into relatively solid blocks. More effective and economical public land management will result.



Recent studies of national forest boundaries indicate that about 1,700,000 acres of isolated, scattered, or checkerboarded national forest lands should be exchanged for intermingled private, State, or county lands to achieve needed ownership consolidations and permit desirable national forest boundary adjustments. There are additional exchanges necessary to readjust ownership patterns in the parts of the national forest not involved in the boundary change study areas. To promote an efficient and effective national forest land status pattern, land exchange during the next five years should dispose of an average of 340-350,000 acres of national forest lands annually and acquire an equivalent value of lands better suited and better located for national forest purposes.

#### Management of Land Utilization Projects

The Forest Service has the responsibility for administering, in accordance with the provisions of Title III of the Bankhead-Jones Farm Tenant Act, 78 separate projects comprising approximately 7,050,000 acres of Federal land. About 2,000,000 acres are managed directly by the Forest Service. The remaining 5,000,000 acres are managed under short-term lease by local agencies with technical assistance being provided by the Forest Service. Under the disposal policy of the Department of Agriculture, dated March 23, 1954, the acreage under the jurisdiction of the Forest Service may be reduced somewhat during fiscal year 1957.

In addition, the Forest Service has responsibility for approximately 61,700 acres of land in 9 separate areas which are managed under long-term lease by non-Federal public agencies. These areas have been offered for transfer to these agencies. Title to most of the 61,700 acres still under long-term lease should be transferred to the lessee agencies prior to June 30, 1957. 334,499 acres were transferred during fiscal year 1956.

Of the 7,050,000 acres, more than 6,400,000 acres are now being used primarily for grazing or are being planned for restoration to grazing use. Timber production is the primary use of the bulk of the remaining acreage with nearly 600,000 acres devoted or planned for such use. The balance is used for miscellaneous agricultural purposes, or devoted exclusively to recreation and wildlife uses. During the last calendar year, 246,653 cattle and horses and 94,363 sheep and goats grazed these areas under permit. This use totaled over 2,100,000 animal months. This livestock is owned by 5,067 permittees. Uses of these lands included 382 paid permits and 811 free permits for land use and occupancy issued by the Forest Service and about 1,692 mineral leases and permits handled by the Bureau of Land Management, Department of the Interior. 57,165 acres and 1,844,640 acres, respectively, were involved. Recreation visits totaled 988,000, an increase of about 137,000 over the previous fiscal year. Approximately 26 million board feet of timber valued at \$388,167 was cut from the Land Utilization Projects during the year ended June 30, 1956, and nearly 27 million board feet, valued at \$555,870 was sold.

Receipts for the fiscal year totaled \$2,204,059, an increase of \$385,649 over fiscal year 1955.



Efforts are being continued to correct to the extent possible the damage to improvements, grass seedings and established grass areas in the projects within the dust bowl areas of Kansas, Colorado, Oklahoma, Texas, and New Mexico largely from windblown material from adjoining privately owned cultivated lands during the dust storms in the spring of 1954, 1955, and 1956. This restoration work is necessary to the prevention of additional damage to land and improvements from the further movement of wind-blown material.

### Forest Fire Protection

The Forest Service provides protection from fire to 188 million acres of national forest and land utilization lands, which have the following major resource values:

1. 766 billion board feet of sawtimber (more than one third of the nation's total) and other forest products.
2. Thousands of watersheds essential to supplying water for 81,373 miles of streams, 1,648,350 acres of lakes and numerous reservoirs used for domestic water supply, irrigation, agriculture, hydroelectric power, and water transportation.
3. Grazing for more than 8,000,000 domestic livestock and some 3,000,000 big game animals.
4. The hunting, fishing, outdoor scenery, climate and physical facilities that are the primary reasons for people making more than 45,000,000 visits to National Forests in 1956.

Successful fire protection for these great resources is dependent on the extent and effectiveness of prevention, detection and suppression forces. The extent of these forces has decreased by more than 30% during the past 12 years.

For the third year additional funds were provided to strengthen protection on the four Southern California National Forests. Protection forces have been strengthened on 8 of the 31 National Forests which have the most difficult fire problems.

Chart II provides a graphic comparison of the action on two fires on the Cleveland National Forest in Southern California. On the latter fire (San Juan) strengthened suppression forces were employed. The two fires occurred in successive fiscal years under comparable conditions of fire danger, fuel type, season of year, time of origin and wind conditions. On the San Juan fire, the attack time was longer, the strength of attack greater but the control time, area burned, maximum mobilization of manpower, suppression cost and rehabilitation cost were significantly lower by contrast with the Jamison Fire.



## CHART II

# ADDITIONAL FUNDS EQUAL LOWER SUPPRESSION COSTS & SMALLER RESOURCE LOSSES

## RESULT OF STRENGTHENED SUPPRESSION FORCES

### THE FACTS :

Where it happened	Cleveland National Forest
When it happened _ _ _ F.Y. 1955 _ _ _ _ _	1956
The fire _ _ _ _ _ Jamison _ _ _ _ _	San Juan
Fire danger _ _ _ _ _ 50 very high _ _ _ _ _	71 extreme
Fuel type _ _ _ _ _ Heavy brush _ _ _ _ _	Heavy brush
Date _ _ _ _ _ Aug. 30, 1954 _ _ _ _ _	Sept. 2, 1955
Time of origin _ _ _ _ _ 12:58 P.M. _ _ _ _ _	11:39 P.M.
Initial attack time _ _ _ 5 minutes _ _ _ _ _	11 minutes
Fire behavior _ _ _ _ _ Running _ _ _ _ _	Crowning + spotting
Strength of attack _ _ _ 1 tanker + 3 men _ _ _ _ _	2 tanker crews + 25 men
Control time _ _ _ _ _ 115 hrs. 35 min. _ _ _ _ _	1 hr. 10 min.
Area burned _ _ _ _ _ 6,593 acres _ _ _ _ _	2 acres
Max. mobilization _ _ _ 701 men _ _ _ _ _	61 men
Supp. cost _ _ _ _ _ \$ 325,000 _ _ _ _ _	\$ 1,475
Rehabilitation _ _ _ _ _ \$ 46,000 _ _ _ _ _	None needed



# THEORY OF THE EARTH

## AND ITS HISTORY

### BY J. W. GIBBS

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CHAPTER LXXXXXXXV. THE EARTH AS A BODY OF MOISTURE	4675
CHAPTER LXXXXXXXVI. THE EARTH AS A BODY OF HEAT	4695
CHAPTER LXXXXXXXVII. THE EARTH AS A BODY OF COLD	4715
CHAPTER LXXXXXXXVIII. THE EARTH AS A BODY OF LIGHT	4735
CHAPTER LXXXXXXXIX. THE EARTH AS A BODY OF DARKNESS	4755
CHAPTER LXXXXXXXX. THE EARTH AS A BODY OF LIFE	4775
CHAPTER LXXXXXXXXI. THE EARTH AS A BODY OF DEATH	4795
CHAPTER LXXXXXXXII. THE EARTH AS A BODY OF RESURRECTION	4815
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CHAPTER LXXXXXXXIV. THE EARTH AS A BODY OF POWER	4855
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CHAPTER LXXXXXXXXI. THE EARTH AS A BODY OF MERCY	4995
CHAPTER LXXXXXXXII. THE EARTH AS A BODY OF GRACE	5015
CHAPTER LXXXXXXXIII. THE EARTH AS A BODY OF PEACE	5035
CHAPTER LXXXXXXXIV. THE EARTH AS A BODY OF JOY	5055
CHAPTER LXXXXXXXV. THE EARTH AS A BODY OF SORROW	5075
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CHAPTER LXXXXXXXX. THE EARTH AS A BODY OF POWER	6375
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### Character of Fire Season

As usual the severity of fire seasons varied throughout the nation. Chart III illustrates this. Large portions of the West including California and Region 3 in Arizona and New Mexico experienced unusually critical seasons of a severity that occurs only once in about 20 years. For the nation as a whole the year is classified as above average severity.

1. In spite of the season's severity which increased the risk of fires and in spite of greater travel and activity by people, the total number of man-caused fires nationwide was 27 percent less than the average for the preceding 5 years. This reflects the results of increased fire prevention efforts by the Forest Service as well as continued fire prevention activities by the National Advertising Council, State protection organizations, forest users, local governmental units, and many others.
2. The beneficial effects of increased appropriations for fire prevention are evidenced by progress made in the California Region during recent years. The following table illustrates how the numbers of man-caused fires can be reduced during years of comparable severity when prevention efforts are increased:

#### California Region

<u>Item</u>	<u>F.Y. 1951</u>	<u>F.Y. 1956</u>	<u>%of Decrease</u>
No. of man-caused fires	987	551	56%

This significant, sizable improvement was made possible primarily by increased funds for four national forests in Southern California and three national forests in Northern California, or seven out of 17 in the Region. The effectiveness of the intensified prevention activity demonstrates what can be accomplished nationwide when adequate facilities are made available.

In spite of intensified training, noteworthy progress in developing techniques, increased use of modern specialized equipment and numerous other improvements, losses continue to exceed the limit permitting reasonably adequate management of resources.

### Construction and Maintenance of Structural Improvements

Funds for this purpose cover primarily structural improvements for fire control and general administrative purposes including timber sales. Maintenance during recent years is based on a relative priority selection of the most urgent projects within classes of improvements such as look-outs, barracks, storage facilities, offices, dwellings, telephone lines, etc.

Construction funds have been used to take care of the most critical requirements for replacement of existing plant and for urgent additions to plant--primarily for housing of employees at isolated locations where housing is presently not available. The \$1,000,000 increase in fiscal year 1957 will help to alleviate a serious need for employee housing.

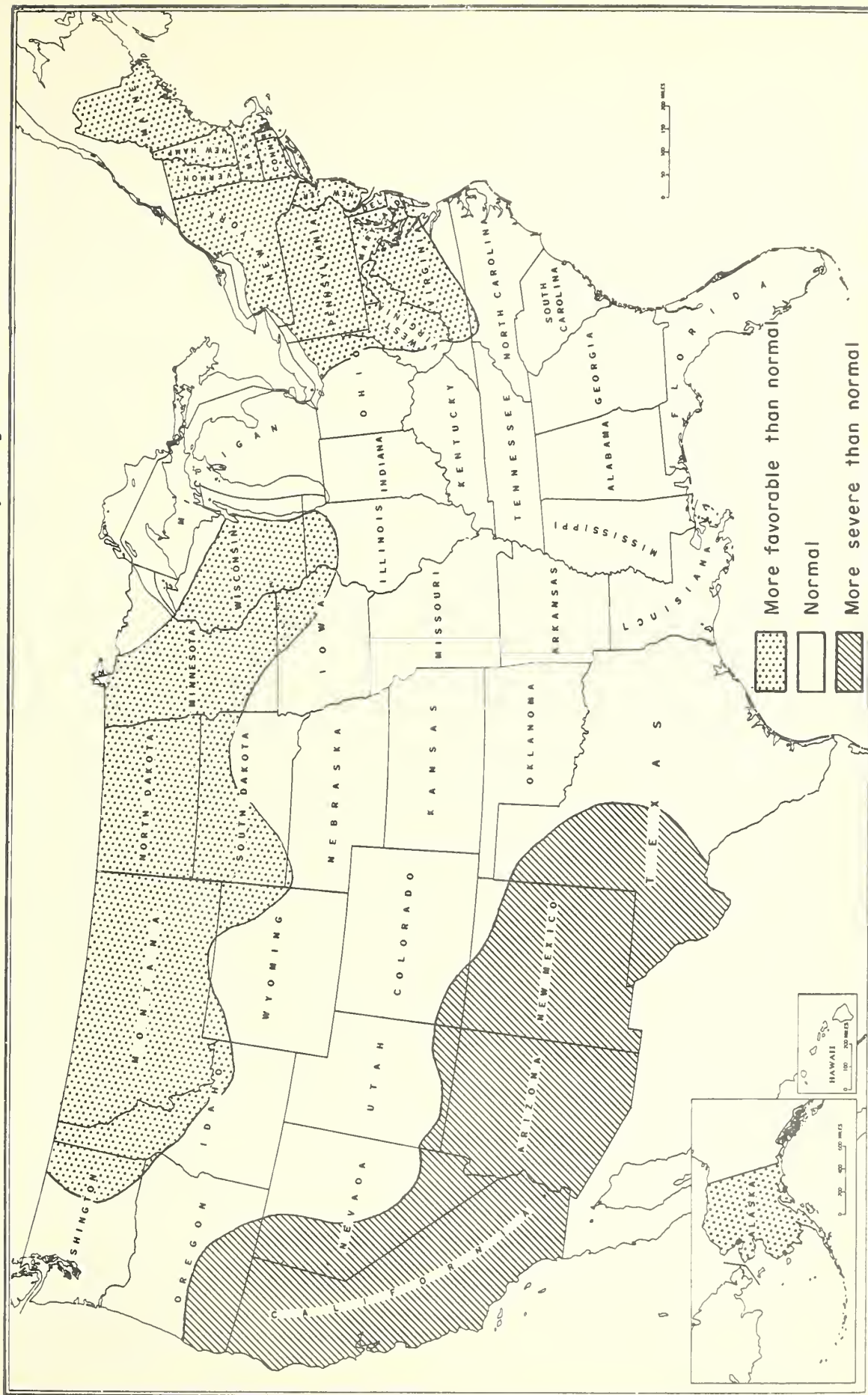




# Chart III

## RELATIVE FIRE CONDITIONS - F.Y. 1956

Developed from narrative reports by regions





### Fighting Forest Fires

Current Activities: This program covers emergency fire control on the national forests. Administrative regulations on the use of fire fighting funds by the Forest Service requires that expenditures shall be made therefrom only when forest fires have actually started, or when fire conditions become so critical that the regular protection organization, financed from the activity "National Forest Protection and Management," is unable to cope with the situation and when, therefore, the temporary increased employment of guards will clearly reduce expenditures for fire fighting.

Chart IV following shows the total area burned and costs for "fighting forest fires" by years. Due to the severity of the fire season, particularly in the California and Southwest Regions, both area burned and expenditures for fighting forest fires in fiscal year 1956 were the highest of any year in the past five.

### Significant Fire Fighting Facts--1956

1. Although the California Region experienced one of the worst periods of high fire danger on record, the total area burned was less than for other bad years in the past decade. During fiscal year 1956 the total area of burn there was 185,448 acres. In fiscal year 1951, also a bad year, although not as severe as fiscal year 1956, the total area of burn was 209,668 or nearly 12 percent greater.

During a short two weeks period in late August and early September of 1955 the California Region had 17 major fires and over 500 others. To meet this unusual impact the region mobilized the largest, most complicated and hardest hitting fire fighting force ever assembled. Chart V following shows the number of men and principal fire equipment used. The success in managing this exceptional workload is clear evidence of progress in training and supervising men, developing techniques for using specialized equipment, such as bulldozers and helicopters, and all-around fire suppression management.

2. The Southwest Region in Arizona and New Mexico also demonstrated real progress in fighting forest fires. The worst fire period in this area occurs during the latter part of the fiscal year. During this period in fiscal year 1956, 63,703 acres were burned. In that same period, fiscal year 1951, when the fire conditions were not as severe, the total burned area was 76,093 or nearly 20 percent greater.

The Southwest Region has improved their organization and skills of fire fighting to a marked degree without any substantial increases in funds available for fire protection. The region controlled 16 major fires as well as 200 others during a period of less than three weeks by efficient management resulting from training and development of fire control employees, intensified use of aerial transportation, adequate utilization of line-constructing bulldozers and other progressive techniques. All but six were held to less than 2,000





CHART IV

# AREA BURNED

## A General Barometer of the Fire Control Job-







# WHAT IT TOOK TO WHIP THE SEPT. 1955 FIRES

17,000  Fire Fighters

2,000  Fire Boss &  
Service personnel

450  Tankers

325  Tractors

12  Helicopters

62  Planes

1400  Trucks & Busses

WHAT IS YOUR FAVORITE

FOOD? I LOVE PIZZA

AND I LOVE TO EAT

IT EVERY DAY

IT IS MY FAVORITE

FOOD AND I LOVE

TO EAT IT

EVERY DAY

IT IS MY FAVORITE

FOOD AND I LOVE

acres and the largest was 20,200 acres. Although the region showed progress in fighting fire the forces available were inadequate and losses were greater than that required to properly manage the resources.

3. The following statistics indicate progress in use of specialized equipment and skills:
  - a. Over 1,500,000 pounds of freight were delivered by air--an all-time record. Most of the material was delivered by parachute in remote, roadless areas.
  - b. More than 15,000 fire fighters, fire observers and supervisory personnel were transported by aircraft as a means of rapidly mobilizing skilled personnel for use on threatening fires.
  - c. A total of 304 smokejumpers employed at 7 stations in the West dropped on 1,031 fires and spent 3,723 days fighting these fires. They fought other fires for a total of 1,227 man-days.
  - d. Tank trucks, bulldozers, tractor plows and trenchers were used on 2,965 fires out of the total number of 8,123.

To summarize fiscal year 1956 fire suppression performance, overall accomplishments indicate that real progress is being made in some areas. In most sections of the country there are fire control forces which provide adequate protection in the easy and average years. But for the critical fire seasons which develop in some localized areas of the nation nearly every year, there are neither the forces nor is there the knowledge necessary to prevent the oversized fires which create the real protection problem.

#### Insect and Disease Control

Current Activities: This program is conducted under the Forest Pest Control Act, approved June 25, 1947, and the Act authorizing control of the blister rust disease of white pine, approved April 26, 1940. These two Acts established national policies to protect and preserve forest resources of the United States from destructive insects and diseases, thereby enhancing the growth and maintenance of forests, promoting stability of forest-using industries, aiding in forest fire control, conserving forest cover on watersheds, and protecting recreational and other values of forests.

The Forest Service is responsible for detection and appraisal surveys of forest insects and diseases, for leadership and cooperation in the execution of forest pest control programs on State and privately owned lands, and for control activities on Federal lands under its administration. Cooperation is maintained with various units of the Department of the Interior which are responsible for control activities on lands under their jurisdiction.



Insects and diseases are constantly at work in the forests, taking toll at every stage in the development of the stand. Normally they are held in check by such natural factors as weather, parasites, and predators. However, periodically these natural controls become unbalanced and allow an insect or a disease to get out of hand, killing and damaging large quantities of timber. Occasionally too, a pest not native to our forests finds its way into this country from abroad, such for example, the white pine blister rust. These introduced pests frequently prove to be unusually serious. Such outbreaks must be met with prompt and aggressive action if the huge losses they can inflict are to be averted.

Effective action requires: (1) timely surveys for promptly detecting incipient outbreaks, appraising the trend of the outbreak and assessing possibilities of natural or direct control; (2) pre-control work to determine scope of the problem, areas involved, costs, economic valuations and plan of attack, either through application of management practices or by means of direct control measures, or both; and (3) the application of prompt, vigorous and sustained control action, once decision has been reached as to specific steps to be taken.

Greater emphasis is being given to strengthening pre-control to:

- (1) Develop awareness of the perils of forest pests among forest owners and land managers.
- (2) Give increased attention to the management steps that can be taken to reduce losses and minimize the likelihood of an outbreak building-up.
- (3) Develop a pattern for financing and administering cooperative control programs among local, State, and Federal interests.
- (4) Provide skilled leadership for initiating quick action when direct control measures are called for.

Determination of such pre-control steps as whether or not direct control is practical, whether or not forest values justify proposed expenditures, and whether or not landowners or management agencies desire the action and will participate in the programs are essential even though they may not in all instances result in a direct control project.

Control of pests, like control of fire, can be attained with minimum damage and expense by preventive action to reduce the chances of trouble occurring and in being prepared to locate and stamp-out such outbreaks that do develop while they are small.

Selected Examples of Recent Progress:

White Pine Blister Rust

1. Control is established and being maintained on about three-fourths of the 23.3 million acres currently in the control program. However, the total control job is not as far along as indicated by acreage accomplishments due to costly work remaining in the West. These high costs result from many large ribes and rugged terrain where chemicals and heavy equipment for applying them are needed; the inaccessibility of white pine areas from sources of labor, calling for establishment and operation of forest camps; and the high rust hazard making it essential that control work be unusually thorough.

Area not yet worked amounts to .....	1.2 million acres
Area initially treated but where	
rust is not controlled .....	4.5       "       "
Area under control .....	17.6       "       "

During 1955:

New work was done on .....	160,794 acres
Rework was done on .....	666,613       "
Maintenance work was done on .....	586,812       "
Survey work to check on pine	
stocking and ribes regeneration	
was done on .....	1,555,000       "

2. A total of 12.8 million ribes were destroyed and killing infection was removed from 31,000 white pine trees to salvage them for their important aesthetic or crop tree values.
3. Fifty-four camps were operated in western areas and 2,220 seasonal laborers were employed. In addition 446 contracts were negotiated on a competitive bid basis for handling control work in that manner.
4. Gratifying progress was made during the year in integrating control work with white pine management, especially on national forest lands.
5. Funds contributed to control work by the States, counties, towns, and landowners totaled \$712,000, an increase of \$61,000 over 1954.
6. The principal problem area is in the northern Rocky Mountain region where control progress lags behind rust development. There is also some lag on State and private lands in the Lake States. The rust situation in northern Idaho is critical and the Service is using a large proportion of the funds available to expedite control in that area. Likewise, the State of Idaho and the local forest protective associations are expanding their cooperation.



## Insects and Diseases Other than Blister Rust

### Detection and Appraisal Surveys

#### Forest Diseases

Oak wilt still limited to 18 Eastern States. Surveys conducted during the year revealed no significant changes in the distribution of oak wilt. Control programs in Pennsylvania, Maryland, West Virginia, Virginia, and North Carolina appear to be successful in arresting the spread of this disease.

Oak wilt damage heavy in uncontrolled areas. In an eight-county area in Wisconsin where oak wilt has been present and uncontrolled for at least two decades, aerial and ground surveys showed that the disease has killed all the oaks on about 2 percent of the total oak area and that about 0.3 percent of the total oak volume is killed annually. Projection of these figures to the oak volumes and areas throughout the United States is ample justification for a concerted control program.

Excessive unexplained dying of oaks occurs in the Northeast. Red, black, and scarlet oaks are dying at an alarming rate in New York, Pennsylvania, and West Virginia from an unexplained malady. Additional surveys to determine its distribution and research to determine its cause have been started.

Sweetgum blight a continuing problem in the South. Re-examination of permanent sample plots in Maryland and Mississippi indicates that sweetgum blight continues to increase in amount and intensity but at a slower rate than in previous years. In Mississippi during the last three years, 14 percent of the diseased trees on the plots have died. Investigations to determine the cause of the disease continue.

Dwarfmistletoes abundant in western forests. In Colorado and Wyoming dwarfmistletoe occurs in 51 percent of the commercial lodgepole pine stands and is more severe in cutover than in virgin stands. In northern Arizona it occurs in 51 percent of the commercial ponderosa pine stands, in southwestern New Mexico in 54 percent, and in northeastern New Mexico in 23 percent. In the high Sierras of California dwarfmistletoe has caused heavy mortality in red fir stands.

Pole blight losses severe in western white pine stands. Analysis of damage appraisal data taken in 12 pole-blighted stands of western white pine shows that an average of 56 percent of the white pine basal area is either affected or dead from the disease, with a range of 35 to 77 percent.



## Forest Insects

### Douglas-fir beetle epidemic subsides in Oregon during 1955.

Surveys revealed that the Douglas-fir beetle epidemic in Oregon decreased from 5,072,000 acres in 1952 to 873,120 acres in 1955. However, large and almost continuous groups of 300 to 400 trees are being killed by this insect in parts of the State of Washington, and severe tree-killing also is occurring in Montana, Idaho, southern Colorado, and northern New Mexico.

### Epidemic of balsam woolly aphid occurs in Oregon and Washington.

Surveys show that epidemic infestations of the balsam woolly aphid occurred at 109 centers on 295,000 acres in Oregon and Washington during 1955. The current infestations, mostly on Pacific silver fir, are more extensive and more severe than during the past few years.

Decline occurred in rate and scope of tree-killing by silver fir beetles in Oregon and Washington. Epidemic infestations of silver fir beetles in Oregon and Washington declined to 114,720 acres from 652,230 acres that were infested in 1954. The intensity of damage also was less than in previous years.

Spruce budworm epidemics increase in some areas and decline in others. Surveys during 1955 reveal that severe infestations of spruce budworm occur on approximately two million acres in portions of Idaho, Montana, Colorado, New Mexico, and Arizona. Infestations also occur in portions of Minnesota, Michigan, and Maine but at lower levels than in the Rocky Mountain States. In Oregon and Washington, infestation occurs on 542,000 acres but the insect population is at the lowest level since 1947.

New outbreaks of Douglas-fir tussock moth discovered in central California and northeastern Washington. The Douglas-fir tussock moth was found in outbreak proportions on 9,000 acres in Stevens County, Washington, and on 5,000 or more acres in the Stanislaus National Forest in California. Both infestations were found to be heavily parasitized and artificial measures presumably will not be needed for control.

Decline noted in Engelmann spruce beetle infestations in Idaho, Montana, and Colorado. Surveys during 1955 revealed that the severe epidemics of the Engelmann spruce beetle in Idaho, Montana, and Colorado have declined. The decline has occurred as a result of control by natural factors, by logging the infested trees, and by spraying them with toxic chemicals. In some areas, a minor amount of additional control will be needed to reduce infestations to endemic levels.

### New outbreaks of the mountain pine beetle detected in Idaho.

Several new centers of mountain pine beetle outbreaks in portions of Idaho were detected by aerial reconnaissance. The severity of each infestation that was discovered is being determined by ground surveys.

Defoliation of larch timber discovered in northern Rocky Mountains. Large areas of defoliated larch timber were discovered in the northern Rocky Mountains. Much of the defoliation occurred in scattered areas but the center of the infestation occurred over most of three National Forests in Idaho. The insects that are responsible for the damage have not yet been determined, nor is it known at present whether direct action will be needed for control.

Surveys reveal the black-headed budworm outbreak in Alaska has ended. The outbreak of the black-headed budworm on the Tongass National Forest in Alaska diminished in 1955. Light feeding by the insect was noticeable on more than two million acres but the peak of the outbreak is now passed and only scattered pockets of defoliation are expected during the current year.

Scattered outbreaks of the southern pine beetle continue in southern states. Scattered outbreaks of the southern pine beetle occur in many areas throughout the southern and southeastern states. Control work has held infestations in check in areas treated but scattered outbreaks developed in other portions of Mississippi, North and South Carolina, eastern Tennessee, and in northern Georgia where control work had not been undertaken.

Needleminer infestations severe in California and Utah. Surveys reveal that a needleminer infestation affecting lodgepole pine in California, and another species affecting white fir in Utah, have continued at epidemic levels. The weakening effect of defoliation to the pine trees is giving rise to heavy group killing by bark beetles in the affected area.

Surveys reveal sharp increase in severity of European pine shoot moth infestations in Mid-West. The severity of European pine shoot moth infestations increased sharply in lower Michigan, southeastern Wisconsin, and in Illinois, Indiana, and Ohio. Many of the red pine plantations are so severely affected that it has been necessary to curtail efforts to establish this tree species.

### Control Operations

Spruce Budworm - Western States. About 1,381,000 acres were successfully sprayed with airplanes in 1956 to control spruce budworm as follows: Idaho, 609,000 acres; Montana, 766,000 acres; New Mexico, 6,000 acres. The areas treated were largely Federally-owned. Intermingled State and privately-owned lands were also sprayed on a cooperative basis.

Spruce Beetles - Colorado. Control work on large project on the Uncompahgre and San Juan National Forests included chemical treatment of over 325,000 infested trees and commercial logging of 90,000 infested trees in 1955. This major effort has reduced this infestation to the extent that maintenance control by logging and a relatively small amount of chemical treatment, principally of isolated areas, should handle this infestation till it no longer is a threat.



Some 21,000 spruce trees were chemically treated on other national forests in Colorado in a number of small projects carried on in a timely program to prevent devastating epidemics.

Spruce Beetles - Idaho and Montana. Control work on a large spruce beetle epidemic on eight national forests and adjacent areas has been largely by commercial logging of infested trees. From the start of this project in late 1952 to the end of June 1956 about 1.5 billion board feet of spruce timber have been logged. In addition almost 10,000 infested trees, inaccessible for logging, have been felled and sprayed. The back of this epidemic has been broken. Work for the next two or three years will be largely maintenance treatment of scattered trouble spots. Some 4 billion board feet of spruce was saved on the commercial timber lands of the forests involved in this control project.

Southern Pine Beetles - Southern States. Many small control projects carried on in the southern states in 1955 were effective in preventing major epidemics. Continued drought resulted in conditions favorable to pine bark beetle buildup.

Western Pine Beetles - Western States. The largest control project was carried on as a joint project to reduce an epidemic on the Dixie National Forest and Bryce Canyon National Park in Utah. Many smaller control projects throughout the western pine regions have served to keep these insects in check and reduce losses.

Oak Wilt - Eastern States. Cooperative projects are being carried on in Pennsylvania and North Carolina to supplement control by logging of infected trees. Control of oak wilt on the eastern national forests is being largely accomplished by logging. As better surveillance of the areas susceptible to this disease is being obtained it is becoming evident that some direct action must be sustained to treat isolated infection centers which cannot be logged.

The following table reflects the amounts obligated in fiscal year 1956 and tentative plans for the use of funds in fiscal years 1957 and 1958. The distribution of funds for future work is based on knowledge gained from surveys and experience. Redistribution must be made from time to time as progress from surveys defines the infestation pattern that is never static. In general, surveys are made in late summer and during the fall or early winter and precise allocation of funds cannot be determined until surveys are completed.



OBLIGATIONS, FOREST PEST ACT CONTROL

Fiscal Year 1956, and estimates for fiscal years 1957 and 1958

Project	1956	1957 (Estimated)	1958 (Estimated)
<u>Colorado - Spruce Beetle</u>	\$701,044:	\$ 105,000 :	\$50,000
<u>Montana &amp; Northern Idaho -</u>			
Spruce Beetle	358,442:	290,000 :	200,000
Spruce Budworm	778,434:	530,000 :	440,000
<u>Southwest Idaho-Spruce Budworm</u>	433,112:	60,000 :	0
<u>Southern States-Pine Beetles</u>	195,589:	200,000 :	200,000
<u>Utah - Pine Bark Beetles -</u>			
National parks and Dixie			
National Forest	121,268:	30,000 :	30,000
<u>California - National Parks</u>	33,116:	35,000 :	35,000
<u>Eastern States - Oak Wilt</u>	15,953:	25,000 :	25,000
<u>Miscellaneous</u>			
Dept. of the Interior			
Projects	64,297:	60,000 :	71,000
Miscellaneous Forest Service			
Projects & Pre-control	321,502:	416,000 :	709,000
Subtotal - Control Projects	3,022,757:	1,751,000 :	1,760,000
Detection & Appraisal Surveys	412,999:	635,000 :	665,000
Unobligated Balances	101,744:	---	---
Total available or estimated	3,537,500:	2,386,000 :	2,425,000

DEPARTMENT OF THE INTERIOR - Insect and Disease Control Projects

Prevention of serious losses from diseases and insects in the forests under the jurisdiction of the Department of the Interior is an important activity under the Forest Pest Control programs. Approximately 200 million acres of forests and woodlands are administered by the Department of the Interior, including 7 million acres by the National Park Service, 1 million acres by the Fish and Wildlife Service, 16 million acres by the Bureau of Indian Affairs, 31 million acres by the Bureau of Land Management in the Continental United States and 144 million by that Bureau in Alaska.

White Pine Blister Rust Control

The objective of the White Pine Blister Rust Control program is to protect the valuable white pine forests from the ravages of the white pine blister rust, a fungous disease of foreign origin. There are 552,404 acres of control area administered by the Department of the Interior, of which 350,112 is under the direction of the National Park Service, 61,307 under the Bureau of Land Management, and 140,985 under the Bureau of Indian Affairs.

In the calendar year 1955, the National Park Service, the Bureau of Land Management, and the Bureau of Indian Affairs collectively destroyed 1,539,448 ribes on 48,483 acres, of which 6,576 were initially worked and 41,907 reworked. Of the total control area 448,916 acres, or 81 percent, is on a maintenance basis.

The National Park Service is completing its review of the need for control work for the protection of such high-elevation white pines, as limber, foxtail, bristlecone, and whitebark pines. These species are found in many of the western National Parks with some of the most outstanding examples within Grand Teton, Rocky Mountain, Yellowstone, Glacier, and Sequoia-Kings National Parks.

The Bureau of Land Management is reappraising its control problems in southern Oregon, following the completion of the exchange of lands between the Forest Service and that Bureau in accordance with the Act of November 24, 1954 (68 Stat. 270).

The control work conducted by the Bureau of Indian Affairs lies for the most part in the Lake States where the work is proceeding according to a longtime work plan. Because of the extremely favorable climate for rust development in the Lake States, the suppressing of ribes on the Indian reservations is very tedious and slow. Although 96 percent of the Indian control area has been initially worked, only 77 percent has been placed on a maintenance basis.

#### Control of Insects and Other Diseases

For many years a program to maintain a low level of infestations and infections and to prevent epidemics within the intensively-used scenic and recreational areas of the National Parks has been successful in conserving these valuable forests. A number of relatively small but nonetheless important projects are involved in this program. Most of these projects require annual attention to maintain the forests in a healthy condition. Examples of these projects are the bark beetles in the California National Parks, the defoliators in the southwestern National Parks and Monuments, dwarf mistletoe in Grand Canyon National Park, and the oak wilt at Effigy Mounds National Monument. Likewise, there are minor projects of a recurring nature at some of the Indian reservations, examples of which are the walkingstick infestation at the Menominee Indian Reservation and the Black Hills beetle at the Navajo Reservation.

There is a pilot control project of major importance now underway in Yosemite National Park against a lodgepole needleminer which is complicated by an interrelated bark beetle infestation. This pilot control project may eventually develop into a full-scale control program.

Quite frequently infestations involving the forests of this Department likewise concern adjacent forest areas. The following are examples requiring coordinated control:

Mountain pine beetle outbreak in Grand Teton National Park and the adjacent Grand Teton National Forest.



Spruce budworm in Montana where public domain forests are intermingled with private lands and lie adjacent to National Forests.

Spruce budworm at the Grand Canyon National Park and adjacent National Forests.

Bark beetle infestation at Bryce Canyon National Park and the adjacent Dixie National Forest.

Southern pine beetle infestation which involves the Cherokee Indian Reservation, Great Smoky Mountains National Park, and the Blue Ridge Parkway, as well as adjacent National Forests and private lands.

#### Acquisition of Lands

This appropriation is provided to acquire lands for the protection of the watersheds of navigable streams and for the production of timber under the provisions of the Weeks Law of March 1, 1911, as amended (16 U.S.C. 513-519, 521).

There are now 70 national forest and purchase units situated in 32 States and Puerto Rico, within which acquisition of lands under the above Acts has been approved by the National Forest Reservation Commission and in which lands still remain to be acquired. All but a few of these units are east of the Great Plains.

In the fiscal year 1956, 296 tracts containing 19,866 acres were approved for purchase under the Weeks Law. These included 277 Indian allotment tracts containing 17,315 acres within the Chippewa National Forest in Minnesota. Purchase of these tracts, not suited for habitation and chiefly valuable for forestry purposes, will help consolidate the national forest and at the same time aid the Indians and the Bureau of Indian Affairs in their program of disposing of allotments not useful to the Indians and best adapted to long term forestry projects. The remaining 19 tracts were parcels needed to meet specific administrative and resource conservation needs, such as: to provide rights-of-way, prevent damage to adjoining public properties, reduce fire hazards, minimize needs for property surveys, and protect publicly owned reservoirs. Their purchase at appraised values or less when the owners wish to sell will result in materially increased efficiency and economy in administration of, and increased public benefits from, these and adjacent national forest lands. Many similar small key tracts surrounded in whole or in part by national forest land and most valuable for national forest purposes also need to be acquired.



## FOREST RESEARCH

The Forest Service conducts research on problems pertaining to all forest land and on the management of related non-forest rangelands, including State and private holdings as well as national forests and other Federal lands.

The research is carried on primarily at the Forest Products Laboratory, Madison, Wisconsin, at nine regional forest and range experiment stations in the continental United States, and at forest research centers in Alaska and Puerto Rico. Much of the research at the regional stations is concentrated at field research centers including experimental forests and ranges where major problems may be studied advantageously.

The research is to a very large extent cooperative with State and private agencies. The following fields of research are under way:

### Forest and Range Management Research

Current Activities: Research under this activity is broken down into that concerned with the growing of timber and the management of forest properties, the management and efficient use of range forage, and the management of both forest and range vegetation to produce the greatest amount of useable water and a minimum of erosion.

Research in forest management emphasizes the development of methods for quickly increasing the growth rate of forests and hence the permissible annual cut. Emphasis is given to harvest cutting patterns that promote regeneration of the forest or increase growth of residual stands. Also being stressed are measures leading to control of undesirable vegetation competing with crop trees. Methods of reforesting farm lands withdrawn or abandoned from cultivation, stripped mining lands, and burned-over forests, are being improved through research. The development of hybrid trees for faster and more certain timber production is being studied, as well as improved methods for stimulating gum flow in pines for the production of resin.

Range management research emphasizes development of methods and practices for building up or maintaining forage production on forest and related non-forest ranges, and for its efficient utilization by game and livestock, at maximum levels consistent with other values of land for watershed, recreation, timber production or other uses. Being stressed are determination of proper intensities of stocking, systems of grazing, and seasons of use for native ranges, seeded ranges, and ranges on which undesirable plants have been controlled. Also being emphasized are the use of fire in the control of undesirable range plants, and the development of methods for restoring and managing desirable forage plants on game ranges.

Watershed management research is directed toward improving soil and cover conditions and practices to alleviate flood and sediment problems arising out of past land use, and toward helping meet urban, rural, and industrial demands for water of good supply and high quality. Watershed use problems are attacked by obtaining quantitative measurements of the effects of such activities as fire, logging, grazing, and road construction on water supply and quality. Concurrent with these studies are those to determine how to use watersheds for various economic purposes and still provide satisfactory water supplies. Possibilities of increasing water yield through manipulation of the vegetation are being studied. Particular attention is being given to the effects of watershed use and management on study areas as they are reflected in soil-plant-water relations. This provides both an understanding of the cause and effects of given measures and a means of predicting the magnitude of results from applying watershed use and management measures on other areas.

### Selected Examples of Recent Progress:

#### Forest Management Research

Precommercial thinning. An analysis of a number of studies of precommercial thinning in western white pine in Idaho shows that the thinnings should be light, removing not more than 20 to 25 percent of the cubic foot volume. All of the thinnings tested, some established as early as 1914, stimulated diameter growth of dominant and codominant trees, but light repeated thinnings had more effect than single heavy thinnings. The thinning also improved the quality and value of the stands but failed to increase total volume production.

Woody plant control. Studies of aerial spraying to reduce brush competition showed that even light applications of 2,4-D and 2,4,5-T foliage sprays will damage the new growth of most Lake States conifers during the growing season, but has no apparent effect after new growth has hardened off in late summer. This means that aerial sprays can be used after about August 1 to release conifer plantations from undesirable brush and tree competition.

Profits from a woodlot. An averaged-sized (50 acres) pilot-study woodlot under management in Maine since 1950, returned an annual cash income of \$526 -- nearly \$18 per day for 29½ days' work for practicing forestry -- and at the same time improved the property. The costs included logging, materials, equipment costs, and improvement work in young stands on the property. About one-third of the merchantable part (37 acres) of the woodlot was cut over each year. The average cut has been 15,000 board feet of sawtimber plus 16 cords of pulpwood, slightly less than the annual growth.

Pruning. White pine in the Southern Appalachians can be pruned with a profit of from \$11 to \$13 per tree or \$57 to \$63 per thousand board feet, at current prices. The selected crop trees should be pruned in one or two operations with no more than one-third of the live crown of the tree being removed at a time.



Shelterbelt plantings. A cooperative survey with state agencies of over 2,700 shelterbelts answered the question of what has happened to the Plains shelterbelt program of the late 1930's. Forty-two percent of the shelterbelts rated good to excellent as effective windbreaks, 30 percent were fair, and 20 percent poor; eight percent had been destroyed. Damage to shelterbelts by livestock is one of the most serious factors now influencing their effectiveness as windbarriers. Twenty-nine percent have been affected. Siberian elm, the most versatile of the fast growing deciduous species, maintained a satisfactory survival and growth rate even on the dry rolling upland sites. Eastern redcedar was the hardiest of the conifers. Other conifers, such as ponderosa pine and Austrian pine were adapted to the drier sites once established, but initial survival was erratic.

Gum yields. The results of a study in Florida of the effects of diameter, crown ratio, and growth rate on gum yields of slash and longleaf pine, can be used as a guide to determine whether extraction of gum from smaller trees is profitable. Maximum gum yields and maximum profits can be obtained in the period preceding the final harvest cut when trees reach their maximum size. Gum extraction is also profitable in advance of intermediate cuttings in the later stages of stand development, but extraction of gum from trees to be taken in early thinnings for pulpwood may be a marginal operation. For turpentine the minimum diameter limit of nine inches should be raised to 10 inches for profitable operation on poorer than average sites.

Direct seeding. Seed-eating birds, particularly meadow larks, for years have nullified attempts to reforest by direct seeding the large acreage of longleaf pine land in Louisiana and Mississippi. Recent cooperative studies with the Fish and Wildlife Service have shown that birds will not take seed treated with Morkit, a commercial preparation. The cost of treating the seed was only 15 cents per pound. In a large trial of sowing treated seed, birds left the seed alone and stands of seedlings of 3,000 or more per acre resulted.

Sitka spruce and western hemlock seed fall. A four-year study showed that spruce and hemlock areas clear-cut as staggered-settings received an average of 352,000 germinable seed per acre annually. Even the largest (81 acres) clear-cut tract studied received an average of 243,000 viable seed per acre annually. It was concluded that rather large openings can be cut in the spruce and hemlock type without endangering subsequent regeneration of these areas. This discovery points to considerable flexibility in harvesting spruce-hemlock forests and to a simplification of the logging operation.

Forest genetics. Western white pine was determined to be highly self-fertile, according to studies in northern Idaho. This finding has important implications because the progeny of self-fertilized trees exhibited a 20 percent reduction in growth in three years. Thus seed orchards using clonal lines will have to be designed to minimize self-fertilization, and tests of progeny of wind pollinated trees will need to take into account the possibility that the results may have occurred from self-fertilization.



Stimulating cone production. Partial girdling has more than doubled cone production on some longleaf pine seed trees in Louisiana. In Montana five partially girdled 50-year-old ponderosa pines produced 216 cones while ungirdled check trees produced only one cone. Cone crops on slash pine in Florida worked for turpentine, which is in a sense comparable to partial girdling, were 50 percent greater than crops on comparable unworked trees. Ammonium phosphate applied in the spring at the rate of 100 pounds per tree for three successive years in California tripled cone production of sugar pine. These findings are timely because of the need for large quantities of trees occasioned by the Soil Bank program.

#### Range Management Research

New grazing system reduces hazards of drought. A new rotation-deferred system of grazing being tested on an allotment in northeastern California being grazed by 500 cattle proved its value and ability to overcome drought in 1955. This was the driest year on record in this area, with only 54 percent of average precipitation. The full number of cattle was grazed for the 4-month period, steers made satisfactory gains of 1.74 pounds per head per day, and ungrazed herbage was left on the ground for range maintenance and watershed protection at the end of the season.

Pocket gophers seriously damage seeded mountain ranges. In the mountains of northern Utah, stands of seeded grasses on the brown soil phase of a soil type yielded 78 percent less forage over a 3-year period on gopher-infested areas than where gophers were controlled. On the grey soil phase of the same soil type, which was less heavily infested with gophers, the reduction in yield was 42 percent. In the mountains of eastern Oregon, pocket gophers destroyed 30 percent of the seeded stands of wheatgrasses by the fifth growing season, and 84 percent of the stand of tall outgrass.

Heavy grazing of crested wheatgrass results in reduced cattle gains. In studies over an 8-year period of grazing practices for ranges seeded to crested wheatgrass at Benmore, Utah, cattle gains per acre are now showing the accumulative impact of different rates of grazing. For the first few years cattle gains per acre were as high or higher where 80 percent of the grass was eaten annually than at lighter rates, even though gains per head were greater at lighter grazing rates. Continued use of this much of the grass has thinned it out and permitted invasion by undesirable plants. Now cattle gains per acre are 36, 38 and 34 pounds, respectively, for ranges where 50, 65 and 80 percent of the herbage is grazed annually. These records demonstrate the unreliability of short-run livestock gains as a measure of the quality of range management.

Native grass worth grazing produced even under well-stocked timber stands in South. Although normal grass yields decrease progressively from about 1,000 pounds dry weight per acre in Georgia as tree canopies increase from 5 to 35 percent, grass production levels off at about 300 pounds per acre under the denser canopies. In Mississippi, average grass yields under open to dense longleaf pine forests ranged from 850 to 400 pounds dry weight per acre.

Livestock and big game competition for forage varies with area and kinds of grazing animals. On the Oak Creek range in Utah one-fifth of the summer range and one-third of the winter range were found to be heavily grazed by both deer and cattle. On the Starkey range in eastern Oregon 75 percent of the deer use and 64 percent of the elk use was in open forest range. Cattle obtained about 60 percent of their grazing from the same areas. Sheep compete more with deer for forage than do cattle, both in areas grazed and in choice of forage. On Monroe Mountain in Utah sheep and deer both grazed about 80 percent of the area intensively.

Optimum depth for planting bitterbrush varies with site. Studies of planting bitterbrush on depleted deer winter ranges show that success is dependent on annual precipitation, soils and hazards of frost-heaving. In northeastern California, optimum depths varied from about 3/4-inch in an area of more favorable precipitation and soil fertility to 1-1/3 inches in an area of lower precipitation and poorer soils. Optimum depths were slightly greater for spring than fall planting. In southwestern Idaho, increasing the depth of planting delayed emergence in the spring and thus helped avoid losses from frost-heaving, but it also reduced the percentage of seedlings that emerged. Planting 4 to 8 seeds per spot, at a depth of 1-1/4 inches, gave satisfactory emergence and delay.

Pinyon and juniper control gives increased herbage yields. Studies on the Fort Apache Indian Reservation in Arizona show that herbage production may be trebled by controlling pinyon and juniper. Natural recovery following control may take 10 years to reach maximum production. Cabling, bulldozing, and chopping out junipers with an axe are the most common systems. Prescribed burning offers some promise but considerably more research is needed.

Genetic and environmental factors may influence sprouting of bitterbrush. Bitterbrush is one of the most valuable browse plants in the West for big game as well as for cattle and sheep. Accidental fires in most areas completely destroy it; in a few areas some plants may sprout. Studies in eastern Idaho, where sprouting is fairly common, showed sprouts to originate from an existing mass of dormant buds on the stem at ground level or from a mass of meristematic tissue formed at ground level following burning or cutting. Studies of the genetics and morphology of sprouting have been initiated in California.



## Watershed Management Research

Southern California watersheds have high water-storage capacities.

This was indicated by analysis of 15 years of hydrologic records from a typical watershed in the San Dimas Experimental Forest. Maximum water stored in the soil and highly-fractured bed-rock was in excess of 22 inches during three of the 15 years studied. Yet the rainfall-discharge relations show that the storage capacity of the watershed was not reached or closely approached even during these years. Part of the water thus temporarily stored reappears to maintain streamflow during non-storm periods and part percolates through the fractured bed-rock and recharges ground-water supplies in the valley below. Watershed management practices that would increase the proportion of rainfall reaching underground storage could result in reduced storm discharge and prolonged water yield from watersheds in the San Gabriel Mountains of Southern California.

Rainfall measurement on rugged mountain watersheds simplified. Hydrologic studies of watersheds require an accurate measurement of precipitation. In mountain areas this has usually required an elaborate network of raingages due to the variation in precipitation caused by topographic features. On the 17,000-acre San Dimas Experimental Forest studies of rainfall variation as related to topography have allowed a reduction in number of raingages from an original total of about 400 to a present number of 17 with no reduction in accuracy of measurement. Besides greatly reducing the workload of collecting data on the experimental forest, this study has resulted in the development of guides to placement of raingages so as to obtain an accurate estimate of rainfall with a minimum number of observations.

Snowpack management studies started in California. A cooperative study with the State of California was started in the Sierra Nevada to determine whether water yields from the snowpack in the commercial forest zone can be increased and prolonged by special methods of managing the forest cover. Water yield from snowmelt in the Sierra Nevada constitutes a major source of water supply for California.

Alpine snowfields of Rockies source of late-summer streamflow. Many late-persisting snowfields in the alpine areas of the Rocky Mountains release 1.5 acre-feet of water per acre of snow surface each week during the summer. Measurements of streamflow from small streams in this area show that their entire flow during the summer is derived from melting of these snowfields. These streams constitute the headwaters of important rivers flowing from the Rockies. Studies are now underway to determine whether snow accumulation can be artificially increased in these snowfields and thereby increasing water available for streamflow throughout the summer and fall.



Logging with overhead cable creates less soil disturbance. Use of the Wyssen Skyline Crane (a Swiss-developed overhead cable system) for logging in steep country shows great promise for substantially reducing soil disturbance and resulting erosion. Measurements of soil disturbance were made on areas in eastern Oregon and Washington logged with the overhead cable, by horse skidding, by jammer cable, and by tractor. Soil disturbance on the horse-logged area was 3.5 times that on the overhead cable-logged area, jammer cable area was 4.7 times, and tractor area 6.5 times. In addition, the overhead cable system requires considerably less mileage of roads than any of the other systems, thereby resulting in fewer erosion source areas.

Haul roads and skid trails main cause of soil disturbance. Tractor logging of selectively cut ponderosa pine in southern Idaho produced soil disturbance on as much as 13.5 percent of the area logged. Studies showed that haul roads contributed 45 percent of the disturbance, skid trails 40 percent, and log loading areas 15 percent. These figures point to the need for care in locating and constructing roads and trails and for providing adequate surface drainage to prevent excessive erosion.

Gullied Piedmont lands can often be quickly stabilized. A severely eroded, gullied old-field in South Carolina was effectively stabilized in one year. First the network of gullies was partly leveled with a bulldozer so that vegetation could get a foothold. Then the area was seeded to sericea lespedeza and crotalaria, fertilized, and lightly mulched with pine needles. Now effectively stabilized, the area will next be planted to loblolly pine to afford a more permanent cover of possible commercial value.

Cutting understory of laurel and rhododendron temporarily increases water yield. Cutting a dense understory of laurel and rhododendron in an old-growth hardwood stand increased the water yield from a small watershed in North Carolina 2.8 area inches the first year after cutting. Since natural regrowth was not cut subsequently, the flow increases have declined to 1.3 inches six years after cutting and will probably be negligible by the 10th year. This treatment represents a possible method of temporarily increasing water supplies from a municipal watershed of similar vegetative, climatic, and soils conditions.

#### Forest Protection Research (Fire, Insects, Diseases)

Current Activities: This work includes projects concerned with research on the control or prevention of fires, insects, and diseases in forests.

Research on the protection of forest, range, and watershed lands from fire is directed toward reducing losses from fire and toward better efficiency in application of fire control measures. Successful management of these lands for their most productive use can be accomplished only as uncontrolled fire is excluded. The fire problem with which this activity is concerned is important to civil and military authorities as well as to land managers because of the serious threat to

other values and activities by the 200,000 forest and range fires that occur every year. The investigation of unexpected behavior of big fires is getting special attention, improved action through use of airplanes and helicopters is being studied, as well as possibilities of improving fire prevention to reduce the number of man-caused fires. Explorations on reducing the severity of fire-setting lightning storms are continuing.

Research on forest insects is directed toward the prevention or control of destructive insect attack on forests and forest products. Damage by insects enters into all phases of forest management from the seed to the mature forest. The development of effective and economical methods of direct and indirect control is dependent upon thorough knowledge of life histories and habits of forest insects including the interrelationships between the insects and their environments. Investigations on direct control methods involve mechanical and chemical methods. Research on improvement of insect survey methods with particular emphasis on use of aerial photographs is an important phase of the work. Control of forest insects by indirect methods such as the use of natural or introduced predators and diseases of insects, and by silvicultural practices designed to prevent the build up of insect epidemics offers promise and is being emphasized in the research program.

Research on diseases in forests, forest tree nurseries, and on decays and stains of forest products provides the basic information on the causes of diseases and on practicable and effective methods of combatting them. Diseases are caused by fungi, bacteria, viruses, nematodes, and unfavorable environmental conditions. They cause annual losses estimated at many millions of board feet of timber, and complicate management and reduce productivity of forest tree resources. Moreover, decays of wood cause a shortening of its service life in homes, farm structures, poles, posts, etc.

#### Selected Examples of Recent Progress:

##### Forest Fire Research

More aerial support for ground fire fighters. New techniques for dropping bulk water and chemicals from low-flying agricultural spray planes have been developed to slow down fires until ground forces can achieve control. This new water drop method eliminates the former danger of hitting ground personnel with airborne containers and gives better coverage. Helicopters adapted for laying fire fighting hose in steep brush country are also new. This permits fire fighting with water in places where it was never practical before.

Better forest fire fighting with water. While water is, of course, one of the most effective fire fighting tools if used properly, it costs as much as \$3 a gallon, or more, on the fire line. Several years of research on how to put out the most fire with the least water is summed up in a recent training film, "The Use of Water on Forest Fire." The film shows how to put proven principles of water use into field practice.



Forest fires and weather. Methods have recently been developed that use fire danger rating field data to isolate the effects of weather on forest fire numbers and on the difficulty of controlling them. This is helping fire control agencies solve the formerly difficult problem of evaluating actual year-to-year trends in their fire prevention and control accomplishments.

A new facility for fundamental fire studies. Cooperation with the University of California Department of Engineering has made possible the recent development of a fire laboratory at Berkeley in which to conduct scale model forest fires and other tests of ignition and combustion. The University provided a well-suited building and helped modify it while the Forest Service installed ovens, fire tables, instruments and other work facilities. Important long delayed studies are now under way.

Project Skyfire. By developing new methods and equipment for measuring cloud characteristics, research is rapidly shedding new light on fire-setting lightning storms in the West. Three distinct types of storms have been identified to date. The characteristics of each are being analyzed to guide development of better fire control and possible lightning prevention programs. Project Skyfire, a Forest Service study, has the active cooperation of several Federal, State and private research agencies.

Guides to the salvage of fire damaged timber. Fires in the Southern pines kill or render worthless some trees, while others recover even though appearing superficially to be heavily damaged. Many factors determine each tree's ultimate fate, but until these are resolved research has developed interim guides for determining which trees to cut and which to leave for future growth and rehabilitation of the burn. The guides use amounts of defoliation, crown scorch, bark burn and basal damage as indicators of a tree's chances for death or recovery.

Fire Research Committee and Fire Conference. The National Academy of Sciences-National Research Council recently organized the Fire Research Committee and Fire Conference. The Committee, and Conference are to serve as clearing house for exchange of ideas and new knowledge, coordinate and advise on fire research among research agencies, and to stimulate more fundamental research in combustion of free-burning fires. Lack of this fundamental knowledge is a major barrier to much needed progress in both rural and urban fire control.

#### Forest Insect Research

Benzene hexachloride useful in controlling southern pine beetle. Recent studies have shown that a spray containing benzene hexachloride in fuel oil is equally effective and cheaper to apply for control of the southern pine beetle than a spray of orthodichlorobenzene in fuel oil. In the past, the latter spray has been used in control programs in the South.



Aerial photographs useful in evaluating mortality caused by Douglas-fir bark beetle. A method has been developed for combining photo interpretation with field checking to evaluate epidemic mortality caused by the Douglas-fir bark beetle. The method costs about half as much as a ground survey of comparable accuracy. Color photography, although more costly, was more efficient than panchromatic.

Jeffrey-Coulter pine hybrid resistant to pine reproduction weevil. In 1948, three experimental plantings of the Jeffrey-Coulter pine hybrid were made on the Lassen and Shasta National Forests to test its resistance to the pine reproduction weevil. Results to date show the hybrid to be highly resistant to the insect under field conditions.

DDT in fuel oil effective as a termite soil poison. Inspection of tests in Mississippi show that 8 percent DDT in No. 2 fuel oil, applied at the rate of one quart per cubic foot of soil, is still 90 percent effective in preventing penetration of the soil by subterranean termites after a period of 11 years.

Malathion spray offers promise in lodgepole needleminer control. Past efforts to control infestations of the lodgepole needleminer with insecticides have not been satisfactory. Recent research indicates that a malathion spray may be effective. In limited tests, it has produced a high degree of mortality of larvae and pupae inside mined needles, and has killed considerable numbers of adult moths on the foliage.

Progress made in control of the pales weevil. Pine plantations in the South are subject to damage by the pales weevil. Recent research has shown that this damage can be drastically reduced by spraying seedlings and the soil surface surrounding them with a two percent aldrin emulsion spray. Fairly good control has also been obtained by dipping the seedlings prior to planting in emulsions of two percent dieldrin, aldrin, and heptachlor.

DDT spray controls California flatheaded borer in small scale tests. Newly emerged females of the California flatheaded borer must feed on pine foliage before they can lay eggs. Recent laboratory tests indicate that these insects can be prevented from feeding on pine foliage by spraying it with DDT.

Control of the Nantucket pine moth. Recent studies in Mississippi indicate that damage to plantation pines by this moth can be greatly reduced by spraying the trees with a 5 percent DDT emulsion. Evidence suggests that this emulsion has enough residual action to prevent attack long enough for the trees to make most of their height growth for the season.

DDT spray protects felled oaks from attacks by bark beetles and wood borers. It has been found recently that by spraying oak logs with DDT as soon as the trees are felled, attacks by bark beetles and wood borers can be prevented for several months.

Stand density apparently has little effect on populations of the beech scale. Studies begun in 1952 to determine the effect of density of stand of beech trees on populations of the beech scale indicate that population increase has been roughly the same in both severely thinned and unthinned stands.

Jack-pine budworm infestation apparently reduced by parasites. Jack-pine budworm populations declined in Luce and Chippewa Counties, upper Michigan, in 1955. This decline was associated with, and probably caused by, an increase in percentage parasitism of the budworm in 1955, over that recorded in 1954.

#### Forest Disease Research

Evidence obtained of resistance to chestnut blight in American chestnuts. Scionwood was collected from 28 additional old American chestnut trees that have survived repeated attacks by the chestnut blight fungus in Massachusetts, Connecticut, New York, Maryland, Virginia, and Missouri. This material has been grafted on to chestnut root stocks and will be subjected to tests to determine whether or not the mother trees were genetically resistant to the blight.

Resistance to littleleaf demonstrated in shortleaf pine. Open-pollinated progeny from selected healthy shortleaf pines growing in littleleaf stands exhibited a definite inheritance of resistance. This finding is most important in indicating management practices to control littleleaf.

Root rots in forest nurseries controlled by fumigation. At forest nurseries in Georgia and Michigan successful control of nematodes with methyl bromide fumigation has greatly reduced losses from some root rots in nursery and transplant beds. Wounds made by the nematodes apparently are the entry courts for root rot fungi and elimination of the nematodes prevents infection from taking place.

Fomes annosus root rot serious in pine plantations and natural stands. Fomes annosus root rot is becoming increasingly important as a cause of mortality in natural stands of ponderosa and Jeffrey pine in the West, in plantations of red and white pines in the Northeast, and of white and slash pines in the Southeast. Studies to determine the effectiveness of direct control operations in plantations are now being conducted.

Oak wilt fungus killed by steaming or kiln-drying lumber. Tests indicate that the oak wilt fungus remains viable and is a potential method of spread of the disease in air-seasoned lumber as long as 18 weeks after sawing, or until the moisture content is reduced to less than 20 percent. Steaming or kiln-drying the lumber kills the fungus immediately.



Pole blight correlated with root-soil factors. The severity of pole blight, when expressed as a percentage of the total white pine basal area affected, is significantly correlated with effective soil depth, available water-holding capacity, and rootlet mortality. Shallow, rocky soils, or deep soils with a dense hardpan near the surface are more commonly found to support pole-blighted stands.

Heart rots serious in subalpine fir in Colorado. Rots are negligible in subalpine fir up to 100 years of age and then increase rapidly to 59 percent of the stand infected by age 150 and 85 percent over age 300. On a stem-diameter basis, butt rot occurs in 44 percent of the 7-inch trees, in 93 percent of the 17-inch trees, and in 100 percent of trees 21 inches and larger.

Methodology formulated for accelerated tests of wood preservatives. The soil block method of performing accelerated tests of wood preservatives has been perfected sufficiently that it has been accepted by the American Society for Testing Materials (ASTM) for use pending adoption as standard.

Improved protective shelters adopted for inactive wooden boats. Cooperative studies with the Bureau of Ships have culminated in the adoption by the Navy of a method of constructing protective shelters for inactive wooden boats. This procedure should greatly reduce decay losses in all wooden boats in storage.

Survey completed of diseases of North American forest trees planted abroad. All known information on infectious diseases reported on North American forest trees planted abroad is given in Agricultural Handbook No. 100 recently issued by the Department. This publication will serve as a guide to agencies responsible for preventing the introduction of foreign diseases to North America. Special precautions can be taken against pathogens to which the nation's trees are susceptible.

#### Forest Products Utilization Research

Current Activities: The aim of the forest products research program centered at the Forest Products Laboratory and with field projects at the various regional Forest and Range Experiment Stations, is to contribute to the solution of national, regional, and local utilization problems of all types; to increase efficiency in harvesting timber crops; to reduce unused woods and mill residues to a minimum by finding uses for present residues; to develop new products; and to improve the serviceability and lower the costs of existing products. Its broad aim, in brief, is to develop new utilization outlets for thinnings, unpopular and little-used species of timber, logging and milling residues, and to make the whole timber crop on farms and other forest lands go further and give better service in a wide variety of uses for lumber, paper, chemical and other products derived from wood.



Selected Examples of Recent Progress:

Essential information on use of wood and wood products made available. This "Wood Handbook" (U.S.D.A. Handbook 72) contains up-to-date data which will aid the better and more efficient use of wood and wood products as materials for construction. It includes data on properties, uses protection, fabrication, processing, and modification of timber products.

Information and recommendations on all phases of wood-frame house construction published. Demands for "Wood Frame House Construction" (U.S.D.A. Handbook 73), have been so heavy that it has been re-printed twice by the Government Printing Office and it is presently being sold at a rate of approximately 100 copies per day.

Aid to identification of common woods issued. The publication "Wood: Colors and Kinds" (U.S.D.A. Handbook 101), in color, was prepared for use by lumber dealers, consumers, and teachers of wood technology.

Information on painting and wood siding published. The publication "Wood Siding, How to Paint It, Care for It" gives the house owner or builder, among other things, very valuable information on painting wood exposed to the weather.

Cold-soda pulping process improved. Considerable progress has been made in development of the cold-soda pulping process. This process is expected to produce yields of pulp approaching 95 percent as compared to conventional chemical pulping yields of 45% and semi-chemical yields of 85%. There remains to be worked out such details as economy in use of chemicals and by-products development.

Chemical utilization of woods and mill waste. Progress has been made on the fractionization of wood into its components - a fundamental study which may pave the way toward radically new processes in use of wood as a raw material. In addition, work has progressed on wood hydrolysis to a point where information is available for the construction of a small laboratory pilot plant. It is hoped that this work will point the way toward a greatly reduced cost of production of wood sugars for industrial purposes.

Work on hydrogenation of wood sugars has obtained yields of from 25 to 30 percent glycerol plus approximately equivalent amounts of propylene and ethylene glycol. A small continuous pilot plant is in operation producing about 15 pounds of glycerol per day - 50 pounds of total product. This is a cooperative project with the Ordnance Department to obtain glycerol from non-critical raw materials.

Impreg for patterns and die models. Automobile manufacturers are now successfully using wood impreg for patterns and die models. Previous work had shown the high dimensional stability of mahogany impreg. Work this past year has shown that sugar pine, ponderosa pine, redwood, catio and carisa should be used to furnish a more dimensionally-stable wood than mahogany. This work has been carried on in cooperation with the Ford Motor Company. Results are available and in use by the entire auto industry.

Protection of pulpwood in storage. Studies conducted in cooperation with a large pulp and paper company in the Pacific Northwest indicate that spraying of logs in storage resulted in negligible decay whereas unsprayed logs had an average of 75 percent of sapwood volume decayed. The use of sprays to protect logs in storage has been growing - especially in the West. The results of this study will probably do much to extend this practice.

Quality standards for container wood prepared. A publication "Wood Members for Box Containers" has been prepared in cooperation with Army Engineer Research and Development Laboratories at Fort Belvoir, Virginia. This publication is to be used as a guide for purchase of container woods. Three classes are specified. The results of this work should greatly reduce lumber procurement costs for the military services and tend to insure adequate performance of containers.

Kiln drying of oak improved. A very fast kiln drying schedule for 1/2" oak panelling has been developed and published. Also, a simplified kiln schedule for seasoning 4/4 soft maple has been developed.

Pole tests published. The research program of testing wood poles has been about 60 percent completed. Test materials include four species of southern pine, Douglas-fir, western larch, western red cedar and lodgepole pine. Reports on western larch, Douglas-fir and southern pine have been printed and distributed to the cooperators by the American Society for Testing Materials. The cooperators include ASTM, pole users, producers, interested public bodies, the REA and the Forest Service.

Improved, low-cost, small-capacity kiln for producing charcoal developed. In cooperation with the Forest Products Laboratory, the Lake States and Southeastern Stations have tested various designs of charcoal kilns. An improved model has been built and will be used in connection with related forest management research to develop economic factors involved in using low-grade hardwoods as a raw material.



Hickory Task Force publishes bulletins on utilization of hickory. The Hickory Task Force consists of technicians from industry, universities, and Federal and State agencies concerned with research and publication of known information on hickory. The Southeastern Forest Experiment Station coordinates the work of this committee which includes representatives of the Southern Station and Forest Products Laboratory. The following three new publications were printed during the past year:

Chemistry of Hickory,  
Fungus Enemies of Hickory,  
Seasoning Hickory Lumber and Handle Blanks.

#### Forest Resources Research

Current Activities: This work includes the nationwide Forest Survey and Economic Investigations relating to production and marketing of timber products.

Forest Survey. The nationwide forest survey provides basic forest resource facts by States or counties on the character and condition of forest land; the volume, quality, and location of standing timber; rates of timber growth and natural losses; the amount and kind of timber cut for forest products; and consumption and prospective requirements for timber products. This information provides a basis for policies and action programs of public forestry agencies, forest industries, landowners and many others having direct interests in forest resources.

Economic investigations provide facts relating to marketing of forest products and to the profitability of forestry enterprises and possible means of eliminating some of the economic obstacles to the growing, harvesting, and marketing of forest products. These studies in addition to the Forest Survey thus furnish part of the facts needed for developing national and local forestry programs, as well as increasing timber production and incomes of farmers and other forest landowners and of timber operators.

#### Selected Examples of Recent Progress:

##### Forest Survey

Forest Survey inventory completed on additional 40 million acres. With the progress made in 1956, more than three-fourths of all forest land in the Nation has been surveyed at least once. About 159 million acres remains to be surveyed for the first time, mainly in the Rocky Mountains and Alaska. Because of rapidly changing forest conditions and program needs, timber resource statistics must be brought up to date every 8 to 15 years with resurvey intervals depending on the degree of use and kind of forest. Results of the Survey were released in numerous analytical and statistical reports; highlights of some are presented below.



Georgia's sawtimber volume down despite increase in forest area. Sawtimber volume declined 15 percent since the initial survey in the 1930's, with high quality hardwoods becoming in particularly short supply. During this period the forest area has increased 2.6 million acres. Georgia now has nearly as much timber of all sizes as it did two decades ago, but it averages smaller and of lower quality, and cull volume has doubled. Additional detail is available in the report "Timber Supply Situation in Georgia."

Sawtimber volume trends in Arkansas vary by regions. Since the mid-1930's forest area in the Delta hardwood region has dropped 28 percent and sawtimber volume 22 percent, especially in large hardwoods. In the northwest Quachita Mountains pine volumes have declined whereas hardwood growing stock has increased some 14 percent. In sharp contrast to the general situation, in a seven-county area in South-Central Arkansas where large ownerships predominate pine sawtimber volume has increased 33 percent. The full story is published in "Timber Supplies for Industry in Arkansas."

Forest Survey reports and consultations aid Southern industry. Major Southern railroads and pulp companies regularly refer to the Forest Survey for both general and local information on timber volume and timber growth and cut. Eight new pulp mills and 11 major pulp mill expansions are under construction in the South. To the expanding pulp industry in this region, resource information provided by the Survey is essential to all long-term wood procurement policies.

Research improves forest survey techniques. A new method developed for estimating timber stands by means of a "point-sampling technique" may greatly reduce costs of timber inventory surveys. Research in the use of aerial photos includes an important and promising test of large scale strip photography in the State of Maine.

#### Forest Economics Research

Marketing research provides forest-product price data. A report "Pine Sawtimber Stumpage Prices in South Carolina, 1948 - 1954" provides basic local information on prices obtained for privately owned timber marked by service foresters. A report "Influence of Timber Characteristics Upon Stumpage Prices," shows the degree to which pine stumpage prices for national forest timber in Mississippi, Louisiana, and Texas has been influenced by volume offered for sale, volume per acre, proportion of hardwoods, wholesale prices of pine lumber, and number of bids received for timber. Preliminary studies of hardwood stumpage and log prices in Ohio were initiated during the year in cooperation with the State Forester's Office.

Pine posts offer new market opportunities. A publication "Fence Posts for Piedmont Farms" based on studies in Jasper County, Georgia, points out how development of markets for locally produced pine posts offers opportunities to market thinnings from young pine stands, with resulting increases in local employment and income. Studies in Missouri, conducted in cooperation with the Missouri State Division of Resources and Development, showed the possibilities of developing new markets for a large volume of pine thinnings suitable for posts, poles, or pulpwood. By 1955 six major post and pole producers had become established with 16 concentration yards in the area. During the period 1950 to 1954, production of pine posts increased more than a hundredfold.

## STATE AND PRIVATE FORESTRY COOPERATION

Current Activities: This program, for the most part carried on in cooperation with the States, encourages private timber growing through assistance in preventing and suppressing forest fires, reforestation of denuded and poorly stocked areas, and good management of woodlands. Privately owned forest lands comprise three-fourths of the Nation's commercial forest area and produce 90 percent of all timber cut. The fire-control program applies to all forest lands within the boundaries of organized protection units. The balance of the program is concentrated on small forest properties in private ownership because (a) more than half of the commercial forest acreage is in small holdings averaging only about 60 acres each, (b) the small-owner group comprises 99 percent of private forest owners, and (c) present cutting practices are poorest on these small properties.

### Recent Progress and Trends:

#### 1. Cooperation in forest fire control:

Progress in our major problem of reducing the unprotected area has been maintained at a steady pace, as is shown by a reduction of 4.8 million acres during 1955. The importance of getting a reduction in the unprotected area is emphasized by the fact that in such area burning was at the rate of over 11 percent, whereas on the unprotected area the burn was but 0.6 percent. The number of fires decreased about 14 percent over 1954 and the area burned was down 18 percent over 1954. Until 1956 the Federal appropriation had remained static at about \$9.5 million since 1952.

Other examples of recent cooperative progress:

- (a) North Dakota is the 44th State to enter in this cooperative program.
- (b) A periodic study was initiated in each State to determine the area in need of protection and the cost of such protection under the cooperative program.
- (c) The State and private forestry work in Region 2 (Central Rocky Mountain area) was reorganized in order to provide more efficient supervision of State programs.
- (d) Technical aids in equipment, training, and in fire weather research have been provided to the States.
- (e) Training aids have been prepared primarily for the guidance of the Regional Office men engaged in this work.



The following table shows State allotments and expenditures for cooperation in forest fire control:

	State and Private Funds Expended, F.Y. 1956	Federal Allotments F.Y. 1957 <sup>1/</sup>
Alabama .....	\$820,821	\$377,209
Arkansas .....	815,003	284,616
California .....	6,702,912	1,318,968
Colorado .....	91,054	30,000
Connecticut .....	108,863	45,734
Delaware .....	10,493	13,500
Florida .....	2,134,500	558,566
Georgia .....	2,245,913	566,880
Hawaii .....	10,158	4,500
Idaho .....	299,587	136,265
Illinois .....	117,897	30,653
Indiana .....	173,845 <sup>2/</sup>	47,224
Iowa .....	27,223	30,000
Kentucky .....	305,513	107,427
Louisiana .....	1,318,785	359,000
Maine .....	632,876	217,903
Maryland .....	363,849	104,413
Massachusetts .....	365,943	125,432
Michigan .....	1,855,819	438,399
Minnesota .....	572,260	297,795
Mississippi .....	936,345	293,096
Missouri .....	547,989	194,761
Montana .....	226,457	77,269
Nevada .....	59,160	30,000
New Hampshire .....	161,815	65,327
New Jersey .....	293,608	97,661
New Mexico .....	19,633	30,000
New York .....	719,618	237,771
North Carolina .....	924,052	326,691
North Dakota .....	1,662	4,000
Ohio .....	213,061	71,326
Oklahoma .....	209,719	86,382
Oregon .....	2,182,587	591,416
Pennsylvania .....	765,410	181,908
Rhode Island .....	123,870	32,635
South Carolina .....	933,743	284,927
South Dakota .....	35,175	25,000
Tennessee .....	611,757	214,067
Texas .....	572,706	231,182
Utah .....	64,452	30,000
Vermont .....	48,799	30,000
Virginia .....	657,723	213,959
Washington .....	2,219,560	558,538
West Virginia .....	233,491	131,656
Wisconsin .....	1,242,509	345,944
Administration, Inspection, Prevention, and Special Services to States .....	---	545,000
Grand Totals .....	32,978,215	10,025,000

<sup>1/</sup> While the amount available to a State may, if the allotment is small, exceed previous expenditures by that State, the actual payment to a State never exceeds State and private funds expended by or under the control of the State.

<sup>2/</sup> Tentative

2. Cooperation in forest tree planting:

Forest tree planting on private, State, and community lands progresses at ever-increasing record rates. In fiscal year 1956 forty four States, Hawaii, and Puerto Rico produced 560 million trees and it is expected that this figure will rise to 600 million trees in 1957. During 1956 Minnesota joined the program, thus adding about 13 million trees to this total. This record production resulted from the development of new nursery facilities in many States--particularly in the South--yet the demand is increasing in many States. This program of production and distribution involved about \$4.1 million in fiscal year 1955 of which the Federal Government's share was \$.5 million, the States \$1.6 million, and the private landowners \$2 million.

The average cost of production for this stock in fiscal year 1955 was \$7.91 per thousand trees which is a reduction of 74 cents per thousand from the previous year and \$1.30 beneath the 5-year average. This average sale price of these trees was \$4.63.

3. Cooperation in forest management and processing:

Forty one States are now cooperating with the Federal Government in providing technical forest management assistance to farmers and other small woodland owners. In fiscal year 1956 Pennsylvania, Montana, and Utah were brought into the program. 38,121 owners were assisted in the better management of some 3,124,744 acres of woodland property. They received \$14,757,555 for products harvested. In many cases the woodland owner was encouraged to carry out the harvesting and marketing operations. He, or his hired hands, received a substantial return for their efforts in harvesting the woodland crop. 689 owners were referred to private practicing (consulting) foresters who furnished management services for a fee. Many farmers were assisted in carrying out the forestry practices in the Agricultural Conservation Program. 6,405 sawmill operators and primary forest products processors were helped to do a better job of cutting and processing the tree crop. The cooperating States spent \$1,400,000 on the project and the Federal Government provided \$682,429. The job is still a big one since 74 percent of the Nation's private commercial forest land is in the hands of some 4 million small owners.

4. General forestry assistance:

At the Washington and regional office level the Forest Service, as the principal forestry agent for the Department, provides technical forest management assistance to other Federal, State, community, and private agencies and to the Congress, forest industries, colleges, and landowners. Some of this assistance is routine information but much of it is highly specialized on-the-ground assistance in technical problems of inventory and management. One of the most pressing current problems is to help the 27 States which include large areas of "rural underemployment." The use of local farm grown wood products on the farms is being encouraged to conserve the cash of low-income farmers. New forest industries and expansion of present markets are being encouraged in the many rural areas which have a surplus of both farm labor and tree volumes, particularly surplus hardwoods. For example, in New England in the Middle Connecticut Valley a study was made of the possibilities of

marketing an annual growth of 200,000 cords of surplus hardwoods. The New England Council published the study. With the backing of all interested parties including utilities, railroads, bankers, and Chambers of Commerce, new forest product industries are considering establishing factories in the region to use the surplus hardwoods and provide gainful employment to the local people many of whom are low-income farmers.





(b) Forest Roads and Trails

	Forest Roads and Trails Annual <u>Appropriation</u>	Roads and Trails for States (Permanent <u>appropriation</u> )	<u>Total</u>
Appropriation Act, 1957, and			
Base for 1958 .....	\$24,000,000	\$11,397,600	\$35,397,600
Budget Estimate, 1958 .....	<u>24,336,000</u>	<u>11,848,000</u>	<u>36,184,000</u>
Increase .....	<u>+336,000</u>	<u>+450,400</u>	<u>+786,400</u>

Note: The above tabulation and the following project schedule and justification combine the appropriation for "Forest roads and trails" made pursuant to the Federal-Aid Highway Act of 1921, as amended, and the appropriation of 10 percent of forest receipts for construction and maintenance of roads and trails within the national forests, pursuant to 16 U.S.C. 501. While it is contemplated that the appropriations will continue to be made separately, language is proposed to merge the appropriations each year in order to simplify budgetary presentation and facilitate the work of field officials in planning and carrying out road construction and maintenance projects. This action would not affect in any way the expenditure of these funds under the authorizations of the respective Acts cited above.

SUMMARY OF INCREASES, 1958

Forest Roads and Trails (Direct Appropriation):

For contributions to the retirement fund pursuant to Public Law 854 .....	<u>+\$336,000</u>
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Roads and Trails for States (Permanent Appropriation):

For road construction in the national forests .....	+315,800
For contributions to the retirement fund pursuant to Public Law 854 .....	<u>+134,600</u>
Increases for roads and trails for States (permanent appropriation) .....	<u>+450,400</u>

PROJECT STATEMENT

Project	1956	1957 (estimated)	Increase or decrease:		
			Retire- ment Costs (P.L. 854)	Other	1958 (estimated)
1. Construction of roads and trails	\$22,519,345	\$23,639,600	+\$76,000	+\$2,208,400	\$25,924,000
2. Maintenance of roads and trails	9,232,380	11,758,000	+394,600	-1,892,600	10,260,000
Total retirement costs (P.L.854) ...	[---]	[---]	[+470,600]	[---]	[470,600]
Total available or estimate .....	a/31,751,725	b/35,397,600	+470,600(2)	+315,800(1)	36,184,000
Transfer in 1957 estimates to "Salaries and Expenses, Office of the Secretary, Agriculture" .....	+2,148	---	---	---	---
Transfer from "Roads and Trails for States" (transfer shown in 1956 and 1957 for comparability) .....	-7,753,873	-11,397,600	-134,600	-315,800	-11,848,000
Total appropriation or estimate .....	24,000,000	24,000,000	+336,000	---	24,336,000

a/ In addition, prior year balance of \$193,114 was available in fiscal year 1956.

b/ In addition, prior year balance of \$993,717 is available in fiscal year 1957.

INCREASE

(1) A net increase of \$315,800 is composed of:

(a) A decrease of \$1,892,600 in estimated requirements for maintenance of roads and trails.

In 1957 it was necessary to use additional funds under the maintenance project for repairs and restoration on roads and trails damaged by flood and storms during the winter of 1955-56, primarily in California, Oregon, and Idaho. This work will be completed in 1957 and it is proposed to return the amount of \$1,892,600 to the activity for construction.



(b) An increase of \$2,208,400 for construction of roads and trails

Problem and need: The proposed increase consists of the following:

An increase of \$412,400 to accelerate the construction of timber access roads.

In recent years 8,845 miles of road have been built or improved with appropriated funds and through timber sales contracts. This good progress in opening up national forest timber has contributed to a continuing upward trend in receipts for national forest stumpage. Construction or reconstruction is still needed on about 52,000 miles of timber mainline and feeder access roads in order to gain access to the commercial timber areas of the national forests.

The proposed increase would accelerate the rate at which the timber access road system can be completed.

An increase of \$1,796,000 for the construction and reconstruction of the most heavily used general purpose roads which serve visitors to the national forests.

The construction and improvement of these general purpose roads has been neglected in recent years in favor of constructing access roads to timber areas. As a result, approximately 40 percent of the 123,872 miles of forest development roads are presently unsuitable and often hazardous for travel by the general public. Concurrently there is considerable public demand for additional recreation trails. Adequate standards for the new and old trails and improvement of several thousand miles of deficient fire and general purpose roads represent a long-range program involving several million dollars annually.

This increase would expedite reconstruction of some of the roads and trails having the heaviest use.

The net increase of \$315,800 will be derived from the appropriation for roads and trails for States (10% fund, permanent appropriation).

(2) An increase of \$470,600 is required to meet retirement costs under Public Law 854, applicable to the base for 1958. A full explanation of retirement cost estimates appears under the item "Forest Protection and Utilization," page 39.

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The following table summarizes programs under this appropriation in the fiscal years 1956, 1957, and 1958, including 10% of national forest receipts which are available for similar purposes pursuant to the Act of March 4, 1913 (16 U.S.C.501).

# Program for Roads and Trails

Item	1956	1957 Estimate	1958 Estimate	Incr. or Decr. 1958
		Prior Year:		Compared
		Balances	Appropriation	with 1957
	Obligations Available			Appropriation
<u>CONSTRUCTION</u>				
Bridge replacement .....	\$3,080,772:	\$3,300,000:	\$3,384,000:	+\$84,000
Fire and general purpose roads and trails ..	2,646,456:	\$84,630:	3,553,000:	+1,788,000
Timber access roads .....	16,038,438:	806,087:	18,987,000:	+112,400
Subtotal, Construction .....	21,765,666:	890,717:	25,924,000:	+2,284,400
<u>MAINTENANCE</u>				
Roads and trails .....	9,185,456:	103,000:	10,260,000:	-1,498,000
Total direct obligations, Construction and Maintenance .....	30,951,122:	993,717:	36,184,000:	+786,400
Prior year balance .....	-193,114:	-993,717:		
Balance available in subsequent year .....	+993,717:			
Comparative transfer .....	+2,148:			
Appropriation .....	31,753,873:	---	35,397,600:	+786,400

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored; deleted matter enclosed in brackets):

- For expenses necessary for carrying out the provisions of section 23 of the Federal Highway Act approved November 9, 1921, as amended (23 U.S.C. 23, 23a), relating to forest development roads and trails, including the construction, reconstruction, and maintenance of roads and trails on experimental areas under Forest Service administration, [\$24,000,000, which sum is
- 1 authorized to be appropriated by the Act of May 6, 1954 (23 U.S.C. 23)] \$24,336,000, to remain available until expended: Provided, That funds available under the Act of March 4, 1913
  - 2 (16 U.S.C. 501) shall be merged with and made a part of this appropriation: Provided further, That not less than the amount made available under the provisions of the Act of March 4, 1913, shall be expended under the provisions of such Act.

The first change is proposed to simplify and shorten the wording of this item.

The second change adds two new provisos in order to merge the appropriation of 10% of national forest receipts available under the Act of March 4, 1913 (16 U.S.C. 501), with the funds appropriated for the same general purpose under the provisions of the Federal-Aid Highway Act, as amended. This will facilitate review of funds relating to forest development roads and trails by presenting in one place the total of all funds available and used for this general purpose. Furthermore, it will materially simplify the programming, allotment and accounting of funds at the field level by having just one fund to handle rather than two.

The proposed merging will not affect the amount of funds which would otherwise be distributed for use in the various States as provided under the Act of March 4, 1913 (16 U.S.C. 501). The second new proviso has been added to the language to insure that no change will occur in the distribution and use of these funds:

"Provided further, That not less than the amount made available under the provisions of the Act of March 4, 1913, shall be expended under the provisions of such Act."

Under the above proviso, allocation to the various States of total available merged funds will be made on the basis of planned program needs. However, in no event will the total amount allocated be less than the amount which would be available from the 10% of national forest receipts as provided by the Act of March 4, 1913. Therefore, this change will not affect in any way the purposes or areas in which these funds have heretofore been used.



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STATUS OF PROGRAM

This program provides for the construction and maintenance of roads and trails essential to the protection and management of the national forests and the utilization of their resources. These roads and trails make the national forests accessible so that they can be protected from losses due to fire, insects, and diseases, and the lands managed for optimum production of water, timber, forage, wildlife, and recreational benefits. As currently estimated a forest development transportation system comprised of 167,209.6 miles of roads and 121,511 miles of supplemental trails is needed to make the forests accessible. The status of this system is as follows:

	<u>Miles</u>	
	<u>Roads</u>	<u>Trails</u>
Existing facilities on which stage of improvement is adequate for present use .....	71,418.8	91,294.3
Existing facilities on which stage of improvement is inadequate for present use .....	52,453.7	24,732.6
Planned (nonexisting) facilities estimated to be needed within the next 20 years .....	<u>43,337.1</u>	<u>5,484.1</u>
Total system - existing and planned	<u>167,209.6</u>	<u>121,511 .0</u>

During the fiscal year 1956 the following improvements on the forest development transportation system were accomplished:

<u>By the Government:</u>		Units of	
<u>Item</u>		Work	
		<u>Completed</u>	<u>Obligations</u>
Roads constructed and reconstructed:			
For timber access .....	677.7 Mi.		\$11,441,076
For all purpose access .....	227.3 Mi.		2,038,464
Trails constructed and reconstructed	177.4 Mi.		354,339
Bridges constructed and reconstructed	546 Ea.		4,555,652
Surveys, plans, construction engineering, and supplementary construction on timber access roads constructed by timber purchasers .....	xxx		<u>3,376,135</u>
Total obligations by Government.....			<u>21,765,666</u>

By Timber Purchasers:

<u>Item</u>	<u>Units of Work Completed</u>	<u>Appraised Value of Work</u>
Timber access roads constructed and reconstructed .....	2,143.8 Mi.	\$23,199,716
Bridges constructed and reconstructed ..	24 Ea.	<u>237,149</u>
Total appraised value of purchaser work	xxx	<u>23,436,865</u>

The existing forest development transportation system is maintained in part by the Forest Service and in part by others, such as local public road authorities, private cooperators and permittees, and purchasers of national forest timber. The following table shows how the system was maintained in fiscal year 1956. During that year \$7,500,952 was obligated for work on the roads maintained by the Forest Service and \$1,684,504 for work on the trails.

	<u>Roads</u>	<u>Trails</u>
Mileage maintained by Forest Service ...	75,133.9	114,535.3
Mileage maintained by others .....	44,753.0	1,491.6
Inactive mileage not maintained .....	<u>3,985.6</u>	<u>---</u>
Total existing system .....	<u>123,872.5</u>	<u>116,026.9</u>



(c) Assistance to States for Tree Planting

Budget Estimate, 1958 (for carrying out the provisions of Title IV of the Agricultural Act of 1956, to assist the State Forester or equivalent State official, by means of advice, technical assistance, and financial contribution, to carry out increased tree planting, and reforestation work in accordance with plans submitted by the State and approved by the Secretary of Agriculture) ..... \$4,000,000

PROJECT STATEMENT

Project	1956	1957 (estimated)	1958 (estimated)
Tree planting .....	- -	- -	\$4,000,000
Total obligations .....	- -	- -	4,000,000

INCREASE

Need for Increase: There are more than 50 million acres of non-stocked or partially stocked non-Federal and Federal commercial forest land in need of planting and reforestation. If these lands are to contribute adequately to the future supply of industrial wood the tree planting and reforestation work on them will need to be accelerated. Such reforestation would not only add to the economic strength of the Nation, but would also bring increased public benefits from other values associated with forest cover. During the past five years only 3-1/4 million acres of forest land were planted under all programs.

If action is taken to implement this authority, (Title IV of the Agricultural Act of 1956) the rate of tree planting and reforestation would be materially increased. This appropriation would provide added stimulus for action by the State Legislatures in providing State funds for the States' share of this program. Assurance that Federal funds are available to cover the Federal contribution needed to prosecute the reforestation plans when approved is of primary importance in accomplishing the objectives of the Congress. Based on responses from State Foresters or equivalent officials, a significant beginning can be made in this program in fiscal year 1958 if Federal support appears assured.

Plan of Work: This program will be carried out in cooperation with or through the State Forester or equivalent State official. The advice, technical assistance, and financial contribution to be made to the States will be based on tree-planting and reforestation plans submitted by the State and approved by the Secretary of Agriculture. These plans will indicate the magnitude of the job, the pertinent justifying factors, a description of work planned, the expected participation of all interested parties, the estimated time required to complete the plan, and estimated total cost, segregated by Federal, State, landowner, and other sources.

Title IV tree-planting and reforestation authority applies to land suitable for commercial forest production. This program is to be developed on a project area basis in accordance with plans prepared by the State Forester and approved by the Secretary of Agriculture. The need to accelerate tree planting and reforestation within the project area in order that the area will contribute appropriately to the future needs for industrial wood and other benefits will be given primary consideration in the approval of plans by the Secretary of Agriculture.

The production of trees by the States with the assistance under Section 4 of the Clarke-McNary Act for sale at moderate prices for use on private and non-Federal land will continue to be needed to provide trees for planting in areas not included in approved Title IV project areas and for purchases not authorized by Title IV, such as for shelterbelts and windbreaks.

Insofar as national forest or other Federal lands are included for planting in an approved State plan of reforestation, the planting of these lands will be accelerated as part of the reforestation program of the Federal agency having jurisdiction over the land. Funds for Federal land planting will not be provided from this appropriation but from the regular appropriations available to the respective Federal agencies for such purposes. It is assumed that State Foresters will include Federal lands in plans submitted in those situations where it is the opinion of the forestry leadership within the State that this planting should be accelerated to assure adequate future supplies of industrial wood to supply the needs of industry dependent upon wood production in the area involved and to derive important associated benefits such as watershed protection or improvement, economic benefits to underemployment areas, and betterment of recreational and wildlife values. These considerations will also be evaluated by the Secretary in reviewing plans submitted for his approval. If the program materializes as contemplated, approximately 100,000 acres of land will be planted during the fiscal year, land preparation will be completed on another 100,000 acres, and 200 million tree seedlings will be in production.

#### CHANGE IN LANGUAGE

The estimates include proposed new language for this item as follows:

For expenses necessary to carry out Section 401 of the  
Agricultural Act of 1956, approved May 28, 1956, (70 Stat. 188),  
\$4,000,000, to remain available until expended.

The proposed language would establish a new appropriation to make funds available to carry out the provisions of Section 401 of the Agricultural Act of 1956, approved May 28, 1956.

(d) Acquisition of Lands for Cache National Forest

	Acquisition of Lands for National Forests, Special Acts	Acquisition of Lands for Cache National Forest	Total
Appropriation Act, 1957 ....	\$10,000	- -	\$10,000
Second Supplemental Approp- riation Act, 1957 .....	- -	\$50,000	50,000
Base for 1958 .....	10,000	50,000	60,000
Budget Estimate, 1958 .....	10,000	50,000	60,000

PROJECT STATEMENT

Project	1956	1957 (estimated)	1958 (estimated)
Acquisition of Lands for Cache National Forest .....	\$9,975	\$60,000	\$60,000
Total retirement costs (P.L. 854) ....	[- -]	[- -]	[140]
Unobligated balance .....	25	- -	- -
Total appropriation or estimate ....	10,000	60,000	60,000

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of these items as follows (new language underscored; deleted matter enclosed in brackets):

Acquisition of Lands for National Forests, Special Acts

- 1 For the acquisition of land [to facilitate the control of soil erosion and flood damage originating within the exterior boundaries of the following national forest, in accordance with the provisions of the following Act authorizing annual appropriations of forest receipts for such purposes, and in not to exceed the following amount from such receipts:] in the Cache National
- 2 Forest, Utah, Act of May 11, 1938 ([Public Law 505]) 52 Stat. 347), as amended, \$10,000: Provided, That no part of this appropriation shall be used for acquisition of any land which is not within the boundaries of a national forest: Provided further, That no part of this appropriation shall be used for the acquisition of any land without the approval of the local government concerned.

The first change in this item is proposed in order to shorten and simplify the wording of the appropriation language. This change will not affect in any way the purpose for which this appropriation is made nor the manner in which the work will be conducted.



The second change substitutes the Statutory reference for the public law reference.

Acquisition of Lands for Cache National Forest

For the acquisition of lands within the boundaries of the Cache National Forest, Utah, under the authority of the Act of July 24, 1956 (70 Stat. 632), \$50,000, to remain available until expended.

It is proposed to insert reference to the Act of July 24, 1956 (70 Stat. 632) in order to make it clear that the funds are being appropriated under that Act, and that this appropriation is separate and distinct from that made pursuant to the Act of May 11, 1938 (52 Stat. 347). The appropriation for 1958 will be merged with any unexpended balance of the appropriation made in the Second Supplemental Appropriation Act, 1957 for land acquisition in the Cache National Forest.

## STATUS OF PROGRAM

Two appropriations are available for acquisition of lands for Cache National Forest. The \$10,000 appropriation is available from national forest receipts when appropriated by Congress. The \$50,000 appropriation is based on the Act of July 24, 1956 (70 Stat. 632) which authorized additional appropriations for the same purpose. Funds appropriated under the latter Act must be matched by donation of land or funds of not less than equal value contributed by local agencies or persons. These contributions include costs of lands previously donated to the United States by local agencies or groups and national forest receipts used to purchase land which otherwise would have accrued to the benefit of the local counties to the extent that these exceed contributions by the Federal Government. Preliminary review of past records indicates that the local contribution in accordance with the Act, through fiscal year 1955, is about \$53,400. A final examination of local records may vary this amount slightly. Thus, there was sufficient credit available to meet the non-Federal cost share for 1957. On this basis it is anticipated that local agencies or persons will contribute about \$46,600 to this program in 1958.

These funds are used to acquire lands, within the Cache National Forest, Utah, which are critical from watershed and erosion standpoints to enable control and minimization of soil erosion and flood damage. These lands are in a depleted condition watershed-wise, and are flood and erosion hazards. Public ownership is required to restore such lands and assure against further depletion. In fiscal year 1956, 1,043 acres of these important watershed tracts were acquired.

In 1957 it is planned to acquire an additional 6,000 acres of these lands within the North Fork Ogden River drainage, the North Ogden watershed and the Wellsville Mountain watershed area.





(e) Acquisition of Lands for Superior National Forest

Supplemental Appropriation Act, 1957 .....	\$500,000
Budget Estimate, 1958 .....	<u>500,000</u>

PROJECT STATEMENT

Project	1956	1957 :(estimated):	1958 :(estimated)
Acquisition of Lands for Superior National Forest .....	\$209,752	\$541,680	\$500,000
Unobligated balance brought forward .....	-251,432	-41,680	- -
Unobligated balance carried forward .....	41,680	- -	- -
Total retirement costs (P.L. 854) .....	[- -]	[- -]	[+1,273]
Appropriation or estimate .....	- -	500,000	500,000

STATUS OF PROGRAM

During the fiscal year 1956, 6 tracts containing 468 acres, costing \$176,582, were approved for purchase in the Superior National Forest, Minnesota, under the provisions of Public Law 733 - 80th Congress. Acreage acquired in the area to which this law is applicable from June, 1948 to date, through purchase and exchange, is 16,856 acres.

The Act of June 22, 1956 (Public Law 607 - 84th Congress) amended Public Law 733 (80th Congress) to extend its provisions to the remainder of the Superior Roadless Area and to increase the authorization for appropriations from \$500,000 to \$2,500,000.

Within the area covered by Public Law 733 as amended by the Act of June 22, 1956, there are still to be acquired 30 properties improved and used for commercial resort purposes, 73 properties with other improvements, mostly cabins on them and 39,000 acres of lands not yet developed. An appropriation of \$500,000 in the fiscal year 1957 provides for the purchase of about one-quarter of these properties. Emphasis will be placed on acquisition of improved tracts and tracts which because of location or character may be improved in the near future.

(f) Cooperative Range Improvements

Appropriation Act, 1957 and Base for 1958 .....	\$700,000
Budget Estimate, 1958 .....	<u>700,000</u>

As explained previously in these notes, it is proposed to merge the appropriation made from National Forest receipts pursuant to Section 12 of the Act of April 24, 1950, with the appropriation "Forest Land Management." For comparability, the amounts obligated for this purpose in 1956 and 1957 are also reflected in the Project Statement for "Forest Land Management."

(g) Smoke Jumper Facilities

PROJECT STATEMENT

Project	:	1956	:	1957	:	1958
	:		:	(estimated)	:	(estimated)
Construction of smoke-jumper	:		:		:	
headquarters and air cargo	:		:		:	
supply base .....	:	\$2,723:		- -:		- -
Unobligated balance brought	:		:		:	
forward .....	:	-2,723:		- -:		- -
Appropriation or estimate ...	:	- -:		- -:		- -



(h) Land Utilization Projects

PROJECT STATEMENT

Project	:	1956	:	1957	:	1958
	:		:	(estimated)	:	(estimated)
Unobligated balance brought forward .....	:	-\$55,107:	:	- -:	:	- -
Recovery of prior year obligations .....	:	-25:	:	- -:	:	- -
Unobligated balance no longer available .....	:	<u>1/</u> +55,132:	:	- -:	:	- -
Appropriation or estimate ...	:	- -:	:	- -:	:	- -

1/ Unobligated balance returned to Treasury.

GENERAL PROVISIONS

CHANGES IN LANGUAGE

In the interest of clarity and simplicity in the proposed revision of the appropriation structure for the Forest Service for 1958, a separate section on "General Provisions" is provided. This proposal includes certain provisions, many of which are applicable to all funds available to the Forest Service, in one point in the appropriation language rather than listing them under each applicable appropriation and is preferable to placing them in a lengthy preamble.

The general provisions are proposed for 1958 in the same manner as in the Department of the Interior and Related Agencies Appropriation Act, 1957.

The proposed changes in the language of this item are as follows (new language underscored; deleted matter enclosed in brackets) with explanation of changes and new provisions keyed to each numbered section:

Sec. 201. [Within the unit limit of cost fixed by law, the lump-sum appropriations and authorizations made for the Forest Service under this Act shall be available for the purchase, in addition to those specifically provided for, of not to exceed 133 passenger motor vehicles for replacement only, and for the hire of such vehicles, necessary in the conduct of the work of the Forest Service outside the District of Columbia]

Appropriations available to the Forest Service for the current fiscal year shall be available for: (a) purchase of not to exceed 179 passenger motor vehicles, of which 132 shall be for replacement only, and hire of such vehicles; operation and maintenance of aircraft and the purchase of not to exceed five, of which four shall be for replacement only; (b) employment pursuant to the second sentence of section 706 (a) of the Organic Act of 1944 (5 U.S.C. 574), as amended by section 15 of the Act of August 2, 1946 (5 U.S.C. 55a), not to exceed \$25,000; (c) maintenance, improvement, and construction of aircraft landing fields in, or adjacent to, the national forests, in an amount not to exceed \$250,000; (d) uniforms, or allowances therefor, as authorized by the Act of September 1, 1954, as amended (5 U.S.C. 2131); (e) purchase, erection, and alteration of buildings and other public improvements, but the cost of any such building, exclusive of the cost of constructing a water-supply or sanitary system and of connecting the same with any such building, and exclusive of any tower upon which a lookout house may be erected, shall not exceed \$25,000 (\$30,000 in Alaska): Provided, That one building may be constructed to serve the purposes of two or more buildings at a cost not to exceed the sum of the limitations for separate buildings: Provided further, That any building, the cost of which as improved was \$25,000 or more, shall not be improved within any fiscal year by an amount in excess of 5 per centum of such cost (5 U.S.C. 565a); and (f) expenses of the National Forest Reservation Commission as authorized by section 14 of the Act of March 1, 1911 (16 U.S.C. 514).

[Sec. 202. Of appropriations herein made which are available for the purchase of lands, not to exceed \$1 may be expended for each option to purchase any particular tract or tracts of land.]

Sec. [203] 202. Except to provide materials required in or incident to research or experimental work where no suitable domestic product is available, no part of the funds appropriated to the Forest Service shall be expended in the purchase of twine manufactured from commodities or materials produced outside of the United States.

Sec. [204] 203. No part of any appropriation to the Forest Service in this Act shall be used for publicity or propaganda purposes to support or defeat legislation pending before the Congress.

Sec. 204. The Secretary may sell at market value any property located in Yalobusha, Chickasaw, and Pontotoc counties, Mississippi, administered under title III of the Act of July 22, 1937, and suitable for return to private ownership under such terms and conditions as would not conflict with the purposes of said Act.

Sec. 205. Funds appropriated under this Act shall not be used for acquisition of forest lands under the provisions of the Act approved March 1, 1911, as amended (16 U.S.C. 513-519, 521), where such land is not within the boundaries of a national forest nor shall these lands or lands authorized for purchase in Sanders County, Montana, be acquired without the approval of the local government concerned.

Sec. 201. It is proposed to delete the language of Section 201 in the 1957 Appropriation Act related to the purchase of passenger motor vehicles and to insert in lieu thereof a new section containing a number of facilitating provisions which affect the various appropriations of the Forest Service. These are:

- (a) Authority to purchase and hire passenger motor vehicles; and the purchase, operation, and maintenance of aircraft.

This provision is similar to that contained in the 1957 Appropriation Act. The explanation of the need for the number of passenger motor vehicles and aircraft is included in the justification of the estimates for motor vehicles and aircraft.

- (b) Employment of experts and consultants, pursuant to Section 706(a) of the Department of Agriculture Organic Act of 1944, as amended by Section 15 of the Act of August 2, 1946.

A change in the limitation is proposed from \$15,000 to \$25,000 in order to cover under this limitation the employment of experts for consultation purposes pursuant to Schedule A established by the Civil Service Commission.

The second sentence of section 706(a) of the Organic Act of 1944 (5 U.S.C. 574) authorizes the Department to employ persons or organizations, by contract or otherwise, without regard to the Classification Act of 1949, when provided in applicable appropriations and within total limitations prescribed therein. Section 15 of the Act of August 2, 1946 (5 U.S.C. 55a) modifies the above provision as to employment of experts and consultants by limiting such employment in any one position to not more than one year and by limiting compensation to rates not in excess of the highest rate payable under the Classification Act of 1949, as amended.



Section 6.101 (n) of Schedule A authorizes the employment without regard to civil service requirements of "professional, scientific, and technical experts for temporary, part-time or intermittent employment for consultation purposes". By agreement with the Civil Service Commission, the Department is authorized to appoint qualified experts, consultants, and advisors without prior approval of the Civil Service Commission, under Schedule A authority or under statutory law authority.

The Department of Agriculture and the Civil Service Commission have understood and assumed that the authority to employ consultants under Schedule A is independent of the authority contained in section 15 of the Act of August 2, 1946 and section 706(a) of the Organic Act of 1944, and that consequently, employment pursuant to Schedule A authority need not be charged to any appropriation limitations which might apply to the statutory authorities. However, recent statements by representatives of the General Accounting Office indicate that the General Accounting Office believes that the authority to employ consultants under Schedule A is not independent of the two statutory authorities to the extent that the costs of compensation paid to Schedule A appointees should be charged to the appropriate appropriation limitations which apply to the statutory authorities. They have further indicated that the GAO will not approve employment of consultants under Schedule A if such employment would result in exceeding an appropriation limitation applicable to section 15 of the Act of August 2, 1946. (General Accounting Office testimony before the Executive and Legislative Reorganization Subcommittee of the House Committee on Government Operations, as reported in the Committee's Twenty-Second Intermediate Report of July 24, 1956, House Report No. 2894, page 11.)

The House Committee on Government Operations, in its report of July 24, 1956, took cognizance of the fact that there was some confusion in this area and indicated that the Committee expects to recommend legislation at a future date clarifying the general authority to employ experts and consultants (page 24 of the Report cited above). In order to make adequate provision for the employment of experts and consultants, it is proposed, in 1958, to increase the limitation to cover the employment of consultants under Schedule A. This will require an increase in the limitation from \$15,000 to \$25,000 and is based on actual Schedule A employments of about \$6,600 in the fiscal year 1956 and an estimated \$8,000 in fiscal year 1957. A limitation of \$25,000 for all types of consultant employment is somewhat in excess of such actual employments during recent years. A leeway in the limitation is necessary, however, to provide flexibility of operation in obtaining consultant services which are not available within the regular organization. It is becoming increasingly difficult in certain fields to employ persons with special skills on a permanent Civil Service basis and use of consultants for temporary periods may prove more economical than to attempt securing such services on a permanent basis. Every effort is made to secure needed services within the regular organization. However, this cannot always be accomplished and the employment of outside consultants becomes essential to effective accomplishment of program objectives.

Under these circumstances, it is difficult to foresee the exact amount of consultant services which may be needed during a fiscal year. It is believed that a \$25,000 limitation will provide some flexibility to cover services which cannot be foreseen in advance. Examples of expert and consultant services utilized by the Forest Service are architectural or recreational planning services, mineral examiners, realty appraisers, experts on research projects at the Forest Products Laboratory and elsewhere.

- (c) Provision for the use of Forest Service funds for the maintenance, improvement, and construction of aircraft landing fields.

This provision is identical to that provided in the 1957 Appropriation Act.

- (d) Provision for the furnishing of uniforms or the payment of allowances therefor.

This provision is the same as that provided in the 1957 Appropriation Act.

- (e) Authority for the purchase, erection, and alteration of buildings and other public improvements.

A change in the building limitation is proposed from \$18,500 (\$22,500 in Alaska) to \$25,000 (\$30,000 in Alaska). Also, it is proposed to increase the limitation for improvement of existing buildings from two percent to five percent. These changes are based on increased costs during the period since the present limitations were established.

The last change in the dollar limitation on construction of buildings was made in fiscal year 1954 on the basis of building costs during the latter part of calendar year 1952. Since then, building costs have generally increased about 30 percent (national index of 380 compared with 500).

While most of the building construction proposed for 1958 could be accomplished within the present limitation, there are some areas where increased costs will require a higher limitation. The need is most urgent in the case of residence construction at very remote locations which are isolated from a source of supply for skilled workers and materials. Although most of the construction will be placed under contract, the cost to the contractor of travel and per diem for skilled workers, transportation of building supplies and heavy equipment for excavation and the hauling of sand, gravel or plant-mixed cement will materially increase the contract price. Several bids for this type of construction, during the current fiscal year, exceeded the existing cost limitation. Under these circumstances, the cost of a standard dwelling may run as high as \$20,000 or more. Likewise, other program facilitating buildings such as barracks, warehouses, and offices cost more in these isolated situations.



Even though the building limitation is increased, the Forest Service will continue to secure the most economical construction possible below this figure through the use of prefabricated houses, by combining several construction jobs in one bid to make the job more attractive to prospective bidders and other cost-saving measures. Based on limited experience during the current fiscal year, it appears that the use of prefabricated houses may be a practical solution in many areas, to not only securing the lowest price possible but also in interesting contractors in construction work at remote locations.

Under the proposed increase in the limitation, the Forest Service will continue adherence to established standards for building construction. This is now accomplished in the case of dwelling construction by mandatory adherence to standards prescribed by the Bureau of the Budget. This covers about 90 percent of the program proposed for 1958. The cost for offices is administratively controlled by application of space guidelines based on numbers of employees. The size and cost of warehouses, garages, barracks and other utility buildings is controlled by an analysis of space requirements for programs at each location.

The 2 percent limitation for building improvements was established in fiscal year 1937. Since then, building costs have almost tripled (national index of 180 compared with 500). The proposed change to 5 percent for building improvements is more nearly in line with current costs. This change is needed primarily for a few of the larger Forest Service buildings and particularly at the Forest Products Laboratory, Madison, Wisconsin. The Laboratory facilities are now 25 years old and a 2 percent limitation on the investment cost of the building is unrealistic in view of the increase in costs since the original construction. The increase in limitation is needed in order to permit a number of relatively small improvements each year required to meet the needs of a changing research program. This would involve primarily conversion of storage space to offices and installation of new floor levels in high ceiling rooms to provide the storage space which has been released for office space. The increase is also needed for some other buildings, such as Forest Supervisor offices, warehouses, and shop buildings, most of which were constructed in the 1930's.

In addition to the proposed increase in the limitation on construction and repair of buildings, the following new proviso relating to the cost limitation on construction of buildings has been added:

"Provided, That one building may be constructed to serve the purposes of two or more buildings at a cost not to exceed the sum of the limitations for separate buildings;"

This proviso would permit the construction of multiple-use buildings, including duplex dwelling units, office-warehouse, cookhouse-bunkhouse, and other combination buildings in the interest of economy and to best meet the needs of housing and administrative improvements in this period of expanding work programs.



With the expansion of the building program of the Forest Service it seems that, in many cases, it will be desirable to construct some multiple-use buildings. There is a specific case in Idaho where the site is situated in a narrow draw, which is the only ground available for an administrative site. Most of the space available is already occupied and will not provide the area required to erect the separate buildings that are required under the present limitation.

Combination buildings, such as proposed by the suggested language, would permit erection of two combination buildings within the space available at this site at a saving in overall costs conservatively estimated at 10 to 15 percent. These would be the equivalent of the following:

Combination buildings

1 cook-house-dormitory, 2 story, 4400 square feet at approximately \$10 per square foot ..... \$44,000	(	1 35-man cookhouse, 1400 square feet at \$12 per square foot ..... \$16,800	(
	(	2 13-man dormitory, 1500 square feet at \$12 per square foot ..... 36,000	(
	(	Total ..... 52,800	(
1 duplex, 2 level dwelling at cost of approximately ..... \$28,350	(	2 3-bedroom dwellings, 1200 square feet at \$14 per square foot ..... \$33,600	(

Combination buildings in many cases of the two story, two level, type would appreciably reduce building costs. Combination buildings require less excavation, steps and walks, lumber, carpenter labor, roofing, insulation, plumbing, heating, and plot planting.

The needs at the site in Idaho are currently critical because of the necessity for a dual ranger district headquarters, a work center for a heavy work area, and a lack of privately-owned facilities.

This language would, therefore, permit the erection of one multiple-purpose building rather than the more costly construction of individual buildings within the limitation to serve each purpose.

(f) Provision for expenses of the National Forest Reservation Commission.

This provision is presently included in the annual appropriation act and payment of the expenses of the Commission is authorized by Section 14 of the Act of March 1, 1911 (16 U.S.C. 514).

Sec. 202. It is proposed to delete this Section which authorized the payment of not to exceed \$1 for options to purchase land. Authority for the payment of such options was included in the Department of Agriculture Organic Act of 1956 (Public Law 979), approved August 3, 1956. Therefore, this Section is no longer necessary.

Sections 202 and 203 are continued in 1958 without change except for re-numbering of the Sections due to the elimination of Section 202 of the 1957 Appropriation Act.

Sec. 204. This Section authorizes the sale of land administered under Title III of the Act of July 22, 1937, in Yalobusha, Chickasaw and Pontotoc Counties in Mississippi, which are determined to be suitable for return to private ownership in accordance with the provisions of the Act. This provision is identical to language in the 1957 Appropriation Act.

Sec. 205. Section 205 would prohibit acquisition of land under the "Weeks Act," approved March 1, 1911, as amended, unless such land is within the boundaries of a national forest. In addition, this Section would prohibit the purchase of lands under the "Weeks Act" and the purchase of land in Sanders County, Montana, pursuant to the Act of April 24, 1950, without approval of the local government concerned. These prohibitions are identical to similar provisions contained in the 1957 Appropriation Act.





(1) Expenses, Brush Disposal

Appropriation, 1957 and base for 1958 .....	\$4,500,000
Budget Estimate, 1958 .....	<u>5,000,000</u>
Increase .....	<u>+ 500,000</u>

SUMMARY OF INCREASES, 1958

Increase for brush disposal activities due to increase in estimated deposits from timber sale operators .....	+ 443,500
For contributions to the retirement fund pursuant to Public Law 854 .....	+ 56,500

PROJECT STATEMENT

Project	1956	1957 (estimated)	Increase or Decrease		1958 (estimated)
			Retirement: Costs (P.L. 854):	Other	
1. Brush disposal .	\$3,284,443	\$4,500,000	+\$56,500	+\$443,500(1)	\$5,000,000
2. Brush disposal-- fighting forest fires .....	1/1,921,386	- -	- -	- -	- -
Total retirement costs (P.L. 854)	- -	- -	[+56,500]	[+6,000]	[+62,500]
Total available or estimate .....	5,205,829	4,500,000	+56,500(2)	+443,500	5,000,000
Repayment from "Salaries and expenses, Fight- ing forest fires" for obligations incurred in 1956	- -	- 1,921,386	- -	+ 1,921,386	- -
Unobligated balance brought forward .	- 3,790,346	- 2,031,578	- -	- 1,921,386	- 3,952,964
Unobligated balance carried forward .	2,031,578	3,952,964	- -	- -	3,952,964
Total appropriation or estimate .....	3,447,061	4,500,000	+56,500	+ 443,500	5,000,000

1/ Reflects obligation of \$1,921,386 in 1956 for fighting forest fires which was repaid from the fiscal year 1957 Fighting Forest Fires appropriation.

INCREASES

The estimated increase of \$500,000 in deposits from timber sale operators will be distributed as follows:

(1) An increase of \$443,500 for brush disposal activities.

(2) An increase of \$56,500 is required to meet retirement costs under Public Law 854, applicable to the base for 1958. A full explanation of retirement cost estimates appears under the item "Forest Protection and Utilization", page 39.

## STATUS OF PROGRAM

Timber cutting and removal creates slash, debris, or brush which may in turn materially increase the fire hazard. Prior to the sale of national forest timber, consideration must be given to treatment of these fuel accumulations to avoid creating large continuous areas of high risk slash fuels. Because of this factor, national forest timber sale contracts require treatment of the debris resulting from cutting operations to the degree necessary to reduce the fire hazard to a point near normal. Depending on circumstances, the work may be performed either by the timber purchaser or by the Government. The Brush Disposal appropriation represents deposits by the timber purchaser to cover costs of the work when it is performed by the Government as authorized under section 6 of the Act of April 24, 1950 (16 U.S.C. 490).

There is a wide variation between Regions in the effect that cutting of timber has on fire hazard, and consequently the manner in which debris is treated. In the three Eastern Regions, the volume cut per acre is relatively low, utilization is close, and the general humid atmospheric conditions result in rapid decomposition of debris. Very little special slash disposal work is done on sale areas in these three Regions, the exception being in some of the sales in the pine type where a heavier cut per acre is often made, such as the jack pine stands of Minnesota. In contrast to the light slash disposal requirements in the Eastern Regions, the cost of slash abatement on most sale areas of the Western Regions is high. Treatment of the slash is essential if serious and catastrophic fires are to be prevented. The type of treatment varies considerably due to different methods of cutting. For instance, clear cut areas in the Douglas-fir region are broadcast burned. In selectively cut areas the debris may be piled for burning and this may be done over the whole area or only in strips which break the area up into blocks.

In the Western Regions purchasers are required to perform slash disposal on some sales or to perform certain phases of the work which they can do more efficiently with their crews and equipment while actively engaged in other phases of the operation. While slash disposal follows general prescriptions within regions, the individual needs of each sale offering are planned and appraised prior to advertisement and appropriate specific requirements are incorporated into each timber sale contract. In each instance the least expensive method or combination of methods is used which will attain adequate protection of the area. In some instances adequate protection from fire is attained at less cost by providing additional protection for sale areas until the slash hazard reverts to near normal. Greater intensity of fire protection for several years may be less costly than complete slash disposal immediately after cutting. In such cases Brush Disposal funds are used in providing the needed manpower and facilities.

(j) Roads and Trails for States, National Forests Fund

Appropriation, 1957, and base for 1958 .....	\$11,397,600
Budget Estimate, 1958 .....	<u>11,848,000</u>
Increase (due to an estimated increase in National Forest receipts in fiscal year 1957) .....	<u>+ 450,400</u>

As explained previously in these Notes, it is proposed to merge the permanent appropriation of 10 percent of national forest receipts pursuant to the Act of March 4, 1913 (16 U.S.C. 501) with the annual appropriation for "Forest Roads and Trails". The total amounts available for construction and maintenance of forest roads and trails, and the explanation of the increase for 1958 are included in the Project Statement for "Forest Roads and Trails". This statement also reflects, for comparability, the amounts obligated under this permanent appropriation for the fiscal years 1956 and 1957.



(k) Development and Improvement of a Ranger Dwelling  
Tonto National Forest

PROJECT STATEMENT

Project	1956	1957 (estimated)	1958 (estimated)
Development and improvement of a Forest Service ranger dwelling .....	\$341:	\$645:	- -
Unobligated balance brought forward .....	-986:	-645:	- -
Unobligated balance carried forward .....	645:	- -	- -
Appropriation or estimate .....	- -	- -	- -

(1) Forest Fire Prevention

Appropriation, 1957 and base for 1958 .....	\$15,000
Budget Estimate, 1958 .....	<u>15,000</u>

PROJECT STATEMENT

Project	1956	1957 (estimated)	Increase or Decrease		(estimated)
			Retirement: Costs	Other	
Forest fire prevention	\$31,080	\$23,712	-\$8,712		\$15,000
Unobligated balance					
brought forward .....	-19,837	-8,712	+8,712		
Unobligated balance					
carried forward .....	8,712				
Total retirement costs					
(P. L. 854) .....	[--]	[--]	[\$675]	[--]	[\$675]
Appropriation or estimate:	19,955	15,000			15,000

## STATUS OF PROGRAM

Current Activities: The Smokey Bear licensing program officially known as the Commercial (Fire) Support Educational Program is an important part of the Cooperative Forest Fire Prevention Campaign and it has now been in effect since 1952. The Campaign itself has been conducted for 15 consecutive years as a cooperative project of the State Foresters and the Forest Service, United States Department of Agriculture, and is a public service program of The Advertising Council. The purpose of this campaign is to utilize the free public service resources of the various national advertising channels such as car cards, poster display systems, radio and television networks and magazine and newspaper allocation plans in developing public cooperation in the prevention of man-caused forest fires. Since 1945 this campaign has been built around Smokey Bear who has become recognized and accepted by the public as a nationwide symbol of forest fire prevention.

Under authorization of Public Law 359 of the 82nd Congress, the Secretary of Agriculture has issued rules and regulations governing the licensing program. These licensees specify payment of 5 percent royalties and set up certain controls for administering the program and collecting the royalties including advance deposits to protect the Government's interest.

Selected Examples of Recent Progress: Through the sale and distribution of the various products Smokey has become a welcome visitor in more homes than ever before. The Mayor of a large eastern city said recently "Smokey Bear dolls and other toys are enabling us to indoctrinate children in forest conservation practically from the cradle." An outstanding example of how this program is benefiting through the sale of commercial items is the distribution secured during the current year by the Dell Publishing Company for its first two Smokey Bear comic books. These editions have sold approximately 2,000,000 copies. In addition to carrying an excellent forest fire prevention message, these comic books have also featured stories on wildlife conservation, watershed management, and other phases of forest conservation. It is interesting to note that educators everywhere have given their complete endorsement to this particular item.

Smokey Bear has a strong influence on the boys and girls of the country. He averages 1,000 letters and cards a day and over 4,500 pieces of mail addressed to Smokey have been received in a single day. Although most of the mail comes from children, it is interesting to note that many letters are received from parents telling about the effect which Smokey is having on their children and how in turn the children are insisting that their parents and other grownups follow fire safety practices not only in the forest but in the home as well.



(m) Payment to Minnesota (Cook, Lake, and St. Louis Counties)  
from the National Forests Fund

Appropriation, 1957 and base for 1958 .....	\$46,500
Budget Estimate, 1958 .....	<u>50,000</u>
Increase .....	<u>+3,500</u>

PROJECT STATEMENT

Project	: 1956	: 1957 :(estimated)	: Increase	: 1958 (estimated)
Payment to counties (appropriation or estimate) .....	: \$46,234	: \$46,500	: +\$3,500	: \$50,000

INCREASE

The increase of \$3,500 in this item reflects an estimated increase in payments to the counties indicated resulting from the increased acreage in national forest lands in Superior National Forest wilderness canoeing area in Cook, Lake, and St. Louis Counties. The additional acreage was due to acquisition of lands during fiscal year 1956 as provided by the Act of June 22, 1948.

STATUS OF PROGRAM

Section 5 of Public Law 733, 80th Congress, approved June 22, 1948, provides that the Secretary of the Treasury, upon certification of the Secretary of Agriculture, shall pay to the State of Minnesota at the close of each fiscal year an amount equivalent to three-fourths of one percent of the fair appraised value of certain national forest lands in the counties of Cook, Lake, and St. Louis situated within the Superior National Forest. The Act further provides that payment to the State shall be distributed to each of these counties in conformity with the fair appraised value of such national forest lands in each county.

(n) Payments Due Counties, Submarginal Land Program,  
Farm Tenant Act (Permanent Appropriation)

Appropriation, 1957 and base for 1958 .....	\$575,000
Budget Estimate, 1958 .....	<u>625,000</u>
Increase .....	<u>+50,000</u>

PROJECT STATEMENT

Project	: 1956	: 1957 :(estimated)	: Increase	: 1958 :(estimated)
Payments due counties, submarginal land program (appropriation or estimate).....	: : : :\$460,619	: : : :\$575,000	: : : :+\$50,000	: : : :\$625,000

INCREASE

The increase of \$50,000 in this item results from an estimated increase in the revenues from the use of submarginal lands.

STATUS OF PROGRAM

At the end of each calendar year, 25 percent of the revenues from the use of submarginal lands account are paid to counties under the Provisions of Title III of the Bankhead-Jones Farm Tenant Act, approved July 22, 1937 (50 Stat. 526).

(o) Payments to School Funds, Arizona and New Mexico,  
Act of June 20, 1910

Appropriation, 1957 and base for 1958 .....	\$129,400
Budget Estimate, 1958 .....	<u>129,400</u>

PROJECT STATEMENT

Project	:	1956	:	1957 (estimated)	:	1958 (estimated)
Payments to school funds	:	:	:	:	:	:
(appropriation or estimate) ...	:	\$114,301	:	\$129,400	:	\$129,400

STATUS OF PROGRAM

Under provisions of the Act of June 20, 1910 (36 Stat. 562, 573) certain areas within national forests were granted to the States for school purposes. The percentage that these lands are of the total national forest area within the State is used in determining payments to the States. The receipts from all national forest land within the State are used as the basis for applying the percentage. For example, if total receipts for the State are \$100,000 and if ten percent of lands are in the "granted for school purposes" category, the payment to the State would be \$10,000. The amounts so paid are deducted from the net receipts before computing the 25 percent payments to States.

As soon after close of the fiscal year as the receipts from national forests and the area of school lands in the States of Arizona and New Mexico are determined, the payments are made to the States. Estimated payments in fiscal year 1957 to Arizona will be \$128,520 and to New Mexico \$880.





(p) Payments to States and Territories from the  
National Forests Fund

Appropriation, 1957 and base for 1958 .....	\$28,487,700
Budget Estimate, 1958 .....	<u>29,620,000</u>
Increase (due to an estimated increase in the national forest receipts for the fiscal year 1957) .....	<u><u>+1,132,300</u></u>

PROJECT STATEMENT

Project	: 1956	: 1957 (estimated)	: Increase	: 1958 (estimated)
Payments to States and Territories (appro- priation or estimate)	: \$19,381,155	: \$28,487,700	: +\$1,132,300	: \$29,620,000

INCREASE

The increase of \$1,132,300 in this item for payments to States and Territories in the fiscal year 1958 results from an estimated increase in national forest receipts for the fiscal year 1957.

STATUS OF PROGRAM

The Acts of May 23, 1908, and March 1, 1911, as amended by the Act of June 30, 1914, require, with a few exceptions, that 25 percent of all money received from the national forests during any fiscal year be paid to the States and Territories in which the forests are located, for the benefit of public schools and public roads of the county or counties in which such national forests are situated. The amount of this appropriation varies each year in direct proportion to national forest receipts during the previous fiscal year.

The amounts set aside from receipts collected for the sale of national forest timber, grazing and special use permits, etc., before the 25 percent is applied, are listed below:

1. Payment to the State of Minnesota covering certain national forest lands in the Counties of Cook, Lake, and St. Louis situated within the Superior National Forest, is made under the terms of the Act of June 22, 1948, Public Law 733. Receipts collected from the areas covered by this Act are excluded when the 25 percent payment to the State of Minnesota is computed.
2. For lands in certain counties in Utah, Nevada, and California, the States receive 25 percent of receipts only after funds, if made available by Congress, have been set aside for the acquisition of national forest lands within the specified national forests under the terms of special acts authorizing appropriations from forest receipts for this purpose.
3. Payments to the States of Arizona and New Mexico under the provisions of the Act of June 20, 1910, of shares of the gross receipts from the national forests in those States which are proportionate to the areas of land granted to the States for school purposes within the national forests.



(q) Working Capital Fund

This fund is available, without fiscal year limitation, for financing, on a reimbursable basis or by advance payments in connection with firm orders, various services such as repairing and replacing equipment, stocking and issuing in support of programs of the Forest Service, supplies, and operation of photographic and reproduction facilities. These service operations serve concurrently the programs of fire protection, timber utilization, construction and maintenance of roads and other improvements, reforestation, grazing, watershed, forest and forest products research, and kindred conservation activities of the Forest Service, including cooperative assistance with other Federal agencies, States, counties, farmers, forest landowners, and others engaged in the same objectives. The principal of the fund, consisting of donated assets at its inception in fiscal year 1957, is estimated to be \$18,130,000. This amount, together with earnings on a part-year basis for fiscal year 1957 and the full-year net retained earnings for 1958, totaling \$99,100 represents an estimated \$18.2 million investment of the Government at the end of fiscal year 1958.

Statements reflecting the estimated assets and liabilities and income and expenses of the working capital fund for fiscal years 1957 and 1958 are printed in the Budget schedules and in the Subcommittee Print.



(r) Cooperative Work, Forest Service (Trust Fund)

Contributions are received from cooperators, viz., counties, States, timber sale operators, individuals, and associations, and are expended by the Forest Service in accordance with the terms of the applicable cooperative agreements. The work consists of protection and improvement of the national forests, and forest investigations and protection, reforestation, and administration of private forest lands.

The major programs conducted under the account "Cooperative Work, Forest Service" are described below in terms of the projects reflected in the statement at the end of this section.

1. Construction and Maintenance of Roads and Trails, and
2. Construction and Maintenance of Other Improvements:

The Act of June 30, 1914 (16 U.S.C. 498) authorizes the acceptance of deposits for the improvement of the national forests, and the Act of March 3, 1925, as amended by section 5 (a) of the Act of April 24, 1950 (16 U.S.C. 572) authorizes the acceptance of deposits for administration, improvement, reforestation, and such other kinds of work as the Forest Service is authorized to do, on non-Federally owned lands in or near the national forests. Section 5 (b) of this Act authorizes performance of any such kind of work in connection with the occupancy or use of the national forests or other lands administered by the Forest Service. Deposits are accepted from States, counties, associations, etc., for the construction and maintenance of improvements which are of mutual benefit to both parties or of public benefit. For example, many cooperative agreements are made with counties for the construction and maintenance of roads. In some cases, the Forest Service will pay a county for constructing a short section of a road at a terminus of the county road system. In other cases, a county will deposit money to the Cooperative Work fund to cover the cost of constructing a short stretch of county road which connects with a Forest Service road.

Timber purchasers are required to make repairs or take other corrective measures for damages resulting from their logging operations to national forest lands or to improvements, and for the maintenance occasioned by their heavy hauling on forest roads. In many instances purchasers prefer that such repairs or corrective measures be done by the Forest Service at the operator's expense. Typical cooperative work under this arrangement is the added road maintenance required to keep roads in condition under heavy logging traffic, repair of telephone lines damaged in logging and measures to check erosion in skid trails.

3. Protection of National Forests and Adjacent Private Lands:

The Act of June 30, 1914 (16 U.S.C. 498) authorizes the acceptance of deposits for the protection of the national forests and the Act of March 3, 1925, as amended by section 5, Act of April 24, 1950



(16 U.S.C. 572), authorizes the acceptance of contributions for the protection of private lands in or near the national forests. The major portion of the obligations is for the protection of private lands from fire. This arrangement is of mutual advantage to both parties inasmuch as there are millions of acres of private forest land intermingled with land in Federal ownership on the national forests. The lands in private ownership are usually broken up into tracts so small that it would be uneconomical for the owner to set up a fire control organization for the protection of his land. The advantage to the Government arises from the fact that in many cases it would be necessary to suppress the fires on the private land without reimbursement in order to protect the adjoining Federal land. Ordinarily contributions are not solicited from resident owners, because their active participation in fire prevention and suppression action is considered to be of more value than the monetary contributions.

4. Sale Area Betterment (including reforestation) and Scaling:

Sale area betterment

Under section 3 of the Act of June 9, 1930 (16 U.S.C. 576b) funds are collected from timber sale operators to insure establishment, after cutting, of a new crop where natural regeneration is not satisfactory, to control residual stand compositions where undesirable species tend to invade cutover areas, and to take special measures to improve the quality of the future crop of timber. Such expenditures are essential to maintain productivity on many sale areas and to insure marketability of the next stand of timber. These funds are used on the areas cutover by timber purchasers.

The average collection in fiscal year 1956 was \$1.04 per thousand board feet cut on the national forests. In the Lake States Region, the amount collected is used largely for reforestation to supplement and improve natural regeneration on the cutover areas. In the South, a major problem is to control inferior hardwoods on the highly productive pine-producing land and most of the amount collected is used for removing worthless trees which otherwise would crowd out seedlings of desirable species on cutover areas.

During fiscal year 1956, obligations for sale area betterment work on all national forests amounted to approximately \$5,454,665. This expenditure enabled the Forest Service to plant and seed 43,000 acres of cutover land; prepare 26,000 acres for natural seeding by scarifying, poisoning rodents, and other seedbed preparation; to release plantations and weed and thin 348,000 acres of cutover land; to prune 108,000 acres of promising saplings and poles remaining on cutover areas; to prevent damage to young growth by hogs, sheep, deer, and other grazing animals, largely by fencing on 158,000 acres; to control tree diseases threatening young growth on 23,300 acres and to prepare otherwise 6,300 cutover acres for planting.

There is a necessary time lag between the collection of funds prior to cutting and the use of the funds. The causes and extent of this

lag for the three general purposes for which the funds are used are as follows:

- (1) Regeneration including planting, seeding, and special measures to facilitate natural seeding. Normally these activities can be carried on within three years after the area is cutover, the elapsed time depending largely upon the amount of preparatory work the cutover area requires before the regeneration measures can be carried out.
- (2) Measures to assure survival of young growth. This includes (a) the removal of inferior tree species and worthless brush through girdling, cutting, and poisoning, and to a lesser extent (b) animal, rodent, and disease control. The time lag between cutting and performance of this work varies with the nature of the element to be controlled and the size and ability of the young growth to meet such competition. Normally the work can be done within a two or three year period but frequently such control must extend for some 7 to 10 years.
- (3) Measures to improve the future stand of timber. This is largely in the form of pruning residual trees left on the cutover area, which can be done promptly.

#### Scaling

Under provisions of section 210 of the Act of September 21, 1944 (16 U.S.C. 572a) acceptance of deposits from timber purchasers for cooperative scaling service is authorized. Such arrangements are established only when requested by the operator and when it is determined the additional work can be performed without net cost to the Government. Where cooperative scaling is done, the cost of the job is divided equitably between the Government and the operator on the basis of time spent on obtaining the records required by each party. The operator's share is deposited in the cooperative fund. This arrangement is possible in only a limited number of situations.

Through avoiding unnecessary duplication of personnel, it permits more efficient operation by both the purchaser and the Government.

#### 5. Research Investigations:

The Acts of June 30, 1914, and May 22, 1928, authorize the acceptance of deposits for forest investigations. Deposits are received from States, associations, industrial concerns, and others to finance research projects which are of mutual benefit to both parties. For example, when a comprehensive forest survey is inaugurated in a State, the State authorities may make a deposit to the Cooperative Work fund for more intensive or rapid completion of the survey than would otherwise be possible. In other cases, an industrial concern, State or association, may ask a research unit of the Forest Service to undertake a research project in which they and the Forest Service are interested. They will deposit funds either in a single sum or on a continuing basis to partially or wholly cover the cost of the research.

The results of such investigations are furnished to the depositor as well as adding to public knowledge on the particular subject.

6. Administration of Private Lands:

The Act of March 3, 1925, as amended by section 5, Act of April 24, 1950 (16 U.S.C. 572) authorizes the acceptance of contributions for the management of private lands. These contributions are made by private owners having land intermingled with or adjacent to national forests and wish these lands managed in accordance with good forest management practices. Their holdings are usually too small to warrant the employment of professional foresters to administer such tracts. The advantages to the Government include the avoidance of possible high fire hazard areas resulting from improper cutting practices, the elimination of the necessity of precisely marking the boundaries of the private land, and the addition of an area of private forest land handled under proper forest practices.

7. Reforestation (private lands):

The Act of March 3, 1925, as amended by section 5, Act of April 24, 1950 (16 U.S.C. 572) authorizes the acceptance of contributions for reforestation of private lands situated within or near a national forest. This work is limited to areas of private land within a planting project on the national forests or to areas in which certain civic and other public-spirited organizations have taken an interest.

8. Statement on Utilization of Funds:

Following is a statement of funds received and obligated and balances available by major activities:



COOPERATIVE WORK, FOREST SERVICE

Trust Fund

Project	Balance Available June 30, 1955	Actual fiscal year 1956		Estimate fiscal year 1957		Estimate fiscal year 1958	
		Funds Received	Balance	Funds Received	Balance	Funds Received	Balance
1. Construction and maintenance of roads and trails	\$767,222	\$815,926	\$827,734	\$850,000	\$755,414	\$850,000	\$755,414
2. Construction and maintenance of other improvements	225,973	431,899	350,425	400,000	307,447	400,000	307,447
3. Protection on national forests and adjacent private land							
(a) Fire	372,038	1,200,283	1,227,667	1,200,000	344,654	1,200,000	344,654
(b) Other	595,450	708,579	658,040	700,000	645,989	700,000	645,989
4. Sale-area betterment (including: reforestation) and scaling	13,001,734	7,637,244	5,800,735	8,580,000	16,338,243	9,080,000	17,338,243
5. Research investigations	262,835	688,810	732,299	700,000	219,346	700,000	219,346
6. Administration of private lands	20,938	30,184	35,646	30,000	15,476	30,000	15,476
7. Reforestation (private lands)	7,949	46,793	25,071	40,000	29,671	40,000	29,671
Total	15,254,139	11,559,718	9,657,617	12,500,000	18,656,240	13,000,000	19,656,240

Note:--Balances carried forward are due primarily to necessity of deferring work for which funds are deposited until the most practicable time. For instance, funds for sale-area betterment are received in advance of cutting, but work cannot be started until cutting operations are completed. The time lag sometimes extends for several years, depending on the amount of preparatory work required in the sale area, weather conditions, etc.

Above obligations for 1956 include transfers to Forest Reserve Fund of \$254,556 and refunds to cooperators of \$303,108.



STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts which, by November 30, 1956, were actually received or programmed for 1957 or 1958. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases.)

Item	Obligations, 1956	Estimated Obligations, 1957	Estimated Obligations, 1958
Allotments from:			
Watershed Protection, Agriculture-			
For planning, installing improve-			
ment measures and investigations:			
in river basins in connection			
with watershed protection			
activities .....	\$588,552:	\$1,027,329:	\$918,186
Flood Prevention, Agriculture-			
For measures primarily for flood			
prevention (works of improve-			
ment) .....	1,257,430:	1,523,833:	1,603,500
Agricultural Conservation Program			
Service, Agriculture - For			
cooperation in administering the			
naval stores program .....	108,949:	123,000:	138,190
Soil Bank Program, Agriculture -			
For assistance in the conserva-			
tion reserve program, primarily			
for expansion of production of			
tree seedlings .....	- -	10,050,000:	6,500,000
Salaries and Expenses, Civil			
Defense Functions of Federal			
Agencies - For civil defense			
activity relating to fire con-			
trol in rural areas .....	- -	70,000:	185,000
Total Allotments .....	1,954,931:	12,794,162:	9,344,876
Allocations and Working Funds			
(Advanced from other agencies):			
Rural Electrification Administra-			
tion - For technical assistance			
on power-line pole problems ....	21,270:	- -	- -
International Cooperation Adminis-			
tration - For economic and			
technical assistance programs ..	128,838:	292,139:	- -

(Continued on next page)



Item	Obligations, 1956	Estimated Obligations, 1957	Estimated Obligations, 1958
Allocations and Working Funds			
(Advanced from other Agencies)--			
Continued:			
Department of the Air Force:			
For reforestation and development			
of nursery stock on the Air Force:			
Academy Site, north of Colorado			
Springs, Colorado .....	8,361:	- -	- -
For research program on aircraft			
plastic laminates, sandwich con-			
struction, and other items .....	1,087:	- -	- -
For classified research .....	261,918:	- -	- -
For research and development of			
packaging and container problems,			
aircraft cargo floor panels,			
mechanism of adhesion, and air-			
craft glues, plastics, core and			
bonding materials .....	269,168:	- -	- -
Total, Department of the Air Force	540,534:	- -	- -
Department of the Army:			
For research in connection with			
the production of glycerol from			
wood sugars and for conducting			
studies on the characterization			
of nitrating pulps .....	188,271:	- -	- -
For relocation and replacement of			
Forest Service facilities			
necessitated by development of			
dams and reservoirs .....	3,605:	- -	- -
Water repellent studies for treat-			
ment of wooden ammunition boxes			
and studies on the characteriza-			
tion of nitrating pulps .....	33,076:	- -	- -
For research on glues for plywood			
and other military items;			
packaging and container problems;			
soil trafficability; survey of			
forest products requirements for			
military purposes; fungicidal			
treatment of ammunition boxes;			
and classified research .....	274,189:	- -	- -
Total, Department of the Army	499,141:	- -	- -

(Continued on next page)

Item	Obligations, 1956	Estimated Obligations, 1957	Estimated Obligations, 1958
Allocations and Working Funds			
(Advanced from other Agencies)--			
Continued:			
Department of the Navy:			
For investigations, tests, and			
studies in connection with			
various wood problems, and for			
research and development of con-			
trol measures on insects and			
other arthropods of importance			
to the national military			
establishment .....	84,278:	- -	- -
For research and development of			
forest products for packaging			
material .....	19,995:	- -	- -
Total, Department of the Navy ....	104,273:	- -	- -
Atomic Energy Commission - For			
administering a program of forest			
management within the bounds of			
the Savannah River Plant area ...	108,531:	- -	- -
Department of Commerce:			
For administrative expenses in			
connection with the Forest High-			
way program .....	96,542:	- -	- -
Investigations of applications,			
and construction, maintenance			
and improvement of access roads			
to sources of raw materials ....	325:	- -	- -
Collection of forest products			
data .....	1,891:	- -	- -
Total, Department of Commerce ....	98,758:	- -	- -
Department of the Interior:			
For rehabilitation or relocation			
of national forest resources and			
improvements damaged or des-			
troyed as a result of the			
development of dams and			
reservoirs .....	84,412:	- -	- -

(Continued on next page)

Item	Obligations, 1956	Estimated Obligations, 1957	Estimated Obligations, 1958
Allocations and Working Funds			
(Advanced from other Agencies)--			
Continued:			
<u>Department of the Interior--Cont'd.</u>			
To cover costs of fire protection			
on certain lands under the juris-			
diction of Bureau of Land			
Management .....	116,714:	- -	- -
For participation in soil and			
moisture conservation program			
within the Boise National Forest	8,199:	- -	- -
To cover cost of improvement of a			
road leading to a fish cultural			
station in the White Mountain			
National Forest .....	23,829:	- -	- -
Total, Department of the Interior	233,154:	- -	- -
<u>Federal Power Commission - In-</u>			
<u>vestigation and supervision of</u>			
<u>Federal Power Commission projects:</u>	1,296:	- -	- -
<u>National Advisory Committee for</u>			
<u>Aeronautics - Research in metal</u>			
<u>surfaces .....</u>	14,991:	- -	- -
<u>Salaries and Expenses, Advisory</u>			
<u>Committee on Weather Control -</u>			
For research on lightning storms:			
and lightning-caused fires ....	9,521:	- -	- -
Total, Allocations and Working Funds:	1,760,307:	292,139:	- -
Trust Funds:			
<u>Cooperative Work, Forest Service:</u>			
Trust funds deposited by coopera-			
tors for the accomplishment of			
certain projects which are of			
mutual benefit to the Forest			
Service and such cooperators			
as follows:			
1. Construction and maintenance			
of roads and trails .....	827,734:	850,000:	850,000

(Continued on next page)



Item	: : Obligations, : 1956	: Estimated : Obligations, : 1957	: Estimated : Obligations, : 1958
Trust Funds--Continued:	:	:	:
Cooperative Work, Forest Service--	:	:	:
Continued:	:	:	:
2. Construction and maintenance	:	:	:
of other improvements .....	350,425:	400,000:	400,000
3. Protection of national forests:	:	:	:
and adjacent private land .....	1,885,707:	1,900,000:	1,900,000
4. Sale-area betterment and	:	:	:
scaling .....	5,800,735:	7,080,000:	8,080,000
5. Research investigations .....	732,299:	700,000:	700,000
6. Administration .....	35,646:	30,000:	30,000
7. Reforestation .....	25,071:	40,000:	40,000
Total, Cooperative Work .....	9,657,617:	11,000,000:	12,000,000
Miscellaneous Contributed Funds	:	:	:
(principally cooperative work on	:	:	:
blister rust control) .....	71,034:	38,662:	- -
Total, Trust Funds .....	9,728,651:	11,038,662:	12,000,000
Obligations under Reimbursements	:	:	:
from Governmental and Other	:	:	:
Sources:	:	:	:
Forest protection and	:	:	:
utilization a/ .....	7,771,483:	6,702,679:	2,736,733
Forest roads and trails, and	:	:	:
Roads and trails for States b/ .	324,841:	1,524,321:	1,524,321
All other .....	31,852:	71,000:	71,000
Total, Reimbursements .....	8,128,176:	8,298,000:	4,332,054
TOTAL, OBLIGATIONS UNDER ALLOTMENTS	:	:	:
AND OTHER FUNDS .....	21,572,065:	32,422,963:	25,676,930

a/ Primarily from other appropriations of Forest Service and other Government agencies for rental of pooled equipment, and for sale of supplies and equipment usually of special design or packaging for field operations.

b/ Primarily sales of supplies and equipment to other appropriations of Forest Service and to other Government agencies.



## PASSENGER MOTOR VEHICLES AND AIRCRAFT

### Replacement and additions of passenger motor vehicles.

The 1958 estimates for the Forest Service propose the replacement of 132 passenger motor vehicles and purchase of 47 additional units. These vehicles are used by (1) forest officers in the protection, utilization, management and development of the national forests and land utilization projects; and in the program for control of forest pests, (2) research technicians on experimental forests and ranges, on field research projects and forest surveys, (3) foresters engaged in carrying out the laws providing for State and private forestry cooperation, and (4) regional office field-going administrative officers in performing, directing and inspecting field work.

The Forest Service is essentially a field organization and its passenger motor vehicles are located mainly at regional, national forest and ranger district headquarters, land utilization projects and experimental forests and ranges. There are over 232 million acres within the exterior boundaries of the national forests and land utilization projects and about 431 million acres of State and private forest land are included within the areas which benefit from Federal participation in the cooperative forest program. Much of this area is without common carrier service, and most forest areas and research centers are remote from commercial travel routes, requiring extensive use of motor vehicles as a means of transportation. The major portion of transportation needs, particularly at forest regional and supervisor levels and at other larger headquarters, involves multiple passenger use and can be more expeditiously and economically met by use of sedans and station wagons than by other types of vehicles.

The dependability of equipment is an important factor in keeping work programs on schedule and in meeting emergencies. Most Forest Service cars are operated under adverse conditions; operation and repair costs become excessive after units have reached the prescribed replacement standards of minimum age of six years or minimum mileage of 60,000 miles. Therefore, overall costs are reduced if the over-age and high mileage units are replaced rather than continued in operation. Further, the continued use of old cars is undesirable from a safety standpoint, since most Forest Service cars are operated over rough, narrow, winding roads in mountainous country. Breakdowns of motor vehicles while on field trips cause disruptions and delays in field work and loss of effective work time of employees. It is estimated that early in fiscal year 1958 the passenger vehicle fleet will include 137 units meeting or exceeding the replacement standards; 37 will meet both age and mileage requirements, 39 age only, and 61 mileage only. It is proposed to replace 132 of these vehicles.

It has been the practice of the Forest Service to keep vehicle numbers at a minimum for work program requirements. The determination of equipment needs is based on analyses of current work plans and programs. Also, it has been the policy of the Forest Service to restrict purchases of automobiles, as well as to pool and integrate the use of those on hand on different activities, in order to keep numbers at a minimum. At larger metropolitan areas, i.e., Denver, Seattle, Atlanta, New Orleans, Albuquerque, Los Angeles, Phoenix, and Washington, D. C., the Forest Service uses GSA car pool vehicles. During the past eight years, there has been a steady reduction in the number of passenger cars, from 912 to an estimated 676 at beginning of fiscal year 1958. Because of this reduction, it has been increasingly difficult to meet the requirements for suitable transportation equipment



due to an increased job load resulting from new and expanded programs. Some activities, such as timber harvesting, recreation -- public use, and special uses (including mining claims) are growing rapidly. Also, there has been increased road and trail construction, and expanded research programs. Field-going personnel on the forests, regional offices, and experiment stations have been increased to administer these programs. Total Forest Service programs have expanded about 50 percent in the past five years without any increase in the number of passenger cars. Increased travel requirements are now considerably in excess of the number of vehicles presently available, and it is estimated that 47 additional units are urgently needed to facilitate the administration of the expanded programs.

Based on the above schedule of replacements and additions, the Forest Service will have a total of 723 passenger motor vehicles in fiscal year 1958. The granting of the requested authorization is essential for effective and economical operation of Forest Service programs.

As of June 30, 1956, the age and mileage classes of Forest Service vehicles were:

<u>Age Data</u>		<u>Mileage Data</u>	
<u>Year Model</u>	<u>No. of Vehicles</u>	<u>Lifetime Mileage</u>	<u>No. of Vehicles</u>
1951 or older	144	80,000 to 100,000	25
1952	69	60,000 to 80,000	80
1953	100	40,000 to 60,000	151
1954	82	20,000 to 40,000	166
1955	152	0 to 20,000	<u>284</u>
1956	<u>159</u>		
Total	706	Total	706

Replacement and additions of aircraft.

The 1958 estimates for the Forest Service propose the replacement of four and addition of one aircraft.

The Forest Service currently has a total of 30 aircraft comprising the following:

- 10 light reconnaissance airplanes
- 10 medium and heavy cargo and transport airplanes
- 1 forest spray airplane
- 1 helicopter
- 8 Torpedo bomber airplanes
- 30 Total

The reconnaissance and transport airplanes are used for transportation of administrative personnel, firefighters, including "smoke jumpers", equipment, and supplies to remote inaccessible areas where airplane service of commercial operators is inadequate or unavailable, for fire reconnaissance and detection, for location of incipient outbreaks of forest insect pests, and in appraising the scope and seriousness of infestations in forested areas. The forest spray airplane is used for research and development work in forest insect control needs. The helicopter which was transferred from the Navy to the Forest Service in fiscal year 1956, under surplus property procedures, is used in direct tactical forest fire suppression work.

Seven of the eight Grumman Avenger single engine torpedo bombers (Navy TBM), in good condition but obsolete for Navy purposes, which were transferred to the Forest Service in fiscal year 1957 under normal excess property procedures, are for use in direct tactical forest fire fighting. One of the torpedo bombers is being used for forest insect control research purposes. Further explanation of the utilization of these eight airplanes is given in footnote 1/ below.

It is estimated that it will be necessary to replace two reconnaissance airplanes and two multi-purpose cargo, smokejumper, personnel transport planes that are more than nine years old. These airplanes are rapidly becoming un-airworthy and have reached the point where it is uneconomical to overhaul them to meet the airworthiness requirements of Civil Air Regulations. Since Forest Service airplanes are operated to a large extent over rough mountainous terrain where landing fields are poor and scarce, these planes must be maintained at a level that will provide top performance and dependability.

In addition to the replacements, one new combination reconnaissance and light personnel transport airplane is needed for the southwestern region in Arizona and New Mexico. This region owns no aircraft at present and has depended solely on commercial rentals or loans from other regions. Aerial activities in this area have expanded rapidly in recent years to facilitate effective functioning of an increased fire protection force required to meet the severe forest fire conditions which have developed during the past decade. A stage has been reached which requires continuous use and availability of a four place aircraft for detection reconnaissance, scouting fires, transporting personnel, guiding ground crews to fires which are difficult to find, dropping emergency equipment and completing numerous other missions all of which contribute to the rapid control of forest fires. Because the plane must be available for use at any time on short notice, costs for a Government-owned aircraft will be much lower than for a private rental plane. Extensive use of commercial aircraft will continue in accordance with needs created by forest fire conditions.

Based on the above schedule of replacements and additions, the Forest Service will have a total of 31 airplanes in fiscal year 1958. The granting of the requested authorization is essential for effective and economical operation of Forest Service programs.

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1/ Supplemental information on utilization of eight Grumman Avenger single-engine torpedo bombers (Navy TBM):

During the past 20 years the Forest Service has experimented with different aircraft, bombs, and chemicals in controlling fires in the highly flammable grass, brush, and timber areas of the West. Aerial cascading of water and chemicals with the Grumman Avengers was one of the methods tried two years ago in "Operation Fire Stop" -- a series of experiments conducted in California by a cooperative group including the Forest Service, other Federal, State, and local fire-fighting agencies; civil defense agencies and private organizations.

These studies opened up several new possibilities in fire fighting. During 1955, further experiments were conducted using Stearman bi-planes equipped for agricultural spraying and with special equipment for forest fire fighting. Early results showed promise and, in 1956, seven of these planes were used in combatting forest fires in the West. Experience with the Stearman showed that airplanes of larger carrying capacity were needed. The Grumman Avenger has



been selected because of its carrying capacity, short landing field requirement, flight characteristics, maneuverability, and general suitability for the purpose. The Forest Service proposes to further develop the special accessory equipment and operating techniques for fire control purposes before equipping all seven of the planes for fire fighting. One plane is now being used for this purpose. Developments with this initial plane will determine the schedule for completion of equipment installation on the remaining planes. It is expected that most of these planes will be operated and maintained under contract by private airplane operators now engaged in agricultural aviation. Experience in spray-plane piloting provides a good background for the operation of these planes in forest fire fighting. Experience to date shows that aerial application of water and other fire extinguishing agents can be a deciding factor in the control of many fires, but cannot replace the ground crews now required.

A few Grumman Avengers are currently being used by forest spray plane operators, but further research and development work in forest insect control needs to be done with this type airplane. One Avenger is being assigned to the Forest Insect Laboratory, Beltsville, Maryland, for this research development purpose.





